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PERMANENCY OF MATERNITY AND INFANCY WORK IN COUNTY HEALTH ORGANIZATION

JOHN A. FERRELL, M.D., DR.P.H., FELLOW A.P.H.A.

Associate Director, International Health Division, Rockefeller Foundation, New York City

IN the United States the county as a rule is the governmental unit which best serves as a basis for local organization. The average county in size, population and wealth is suited to the requirements of a small health organization composed of full-time trained staff members. A town or city with its much smaller area but a population and wealth equal to or exceeding the average county, is exceptionally well suited to the requirements of a local organization. Unfortunately, the city cannot be utilized in the development of a state-wide service. Many states employ both city and county units. In recent years with the obvious exception of the larger cities there has been a marked trend toward a consolidation of city and county health work. Alabama, for example, has provision for county health organizations but none for city health organizations. The health services of Mobile, Montgomery and Birmingham are conducted by a coöperative arrangement between state, city, and county authorities as county organizations.

In a number of states, mainly those in New England, the county is not a strong administrative government unit. Next to the state, the town or township serves as the seat of local government. (Cities, for the purpose of the present discussion, are not considered.) The average town or township in such states is generally too weak in wealth and population to support a creditable full-time health service. The problem of developing in them a local health service capable of state-wide extension is engaging the attention of the public health authorities in these states. A suitable basis doubtless will be evolved and ultimately given wide adoption.

PERMANENT SERVICE THE GOAL

The health service in every community should be continuous. A periodic service for the detection and correction of physical defects and for immunization against such diseases as smallpox, diphtheria and typhoid fever might prove reasonably satisfactory if the field of public health were limited to activities of this type. However, we know that many of the important problems are of an emergency character. To expect that an itinerant health unit available for one week in April and another week in October would be able to prevent the spread of diphtheria or smallpox in a county would be no more reasonable than to propose that a town make an arrangement to have for two weeks each year the protection of a police or a fire brigade.

The emergency character of many public health activities renders it necessary to have full-time workers stationed permanently within call of all parts of the community. Moreover, as a general

rule results are obtained gradually through continuous and persistent effort by workers who know the people, the roads, the conditions, and can deal with each problem at the most opportune time and in the most tactful manner. The itinerant worker, although capable, earnest, industrious and exceptionally well trained, may still be unable solely by brief and irregular visits to meet the needs of the community. An official, adequate, continuous, and permanent service supported by taxes and conducted by full-time workers should be our goal.

OBLIGATIONS TO TAXPAYERS

The taxpayers of the county having a health organization should be reasonably well-informed as to the cost of the health service, the size of the organization, and the activities customarily expected of the health department. They will be dissatisfied if the service is limited indefinitely to one or two special groups of citizens or to one or two special diseases or health problems. Furthermore, they would not tolerate—even for a temporary period—a failure to combat vigorously any threatened epidemic or to deal promptly with other emergencies, even though the personnel might be busily engaged on problems dealt with by routine measures which could be continued from month to month and year to year. They will usually acquiesce in featuring an important activity for a reasonable period of time, especially if extra financial aid is available for this work. It is usually unwise, however, to confine effort to a single phase of health work for too long a period. The people become tired of too persistent education on one subject. They relish an occasional change of topic. The person with no hookworm disease or malaria may have or be threatened with another preventable disease, and as a taxpayer feel that he should not be neglected indefinitely.

Infant welfare work offers many advantages as a feature for a local health organization. This is also true of measures for the protection of women during the puerperal period. These problems are universally important and will be supported by the public as readily and as long as any of the routine procedures of a health department; but even in featuring these subjects the best interest of the cause of public health will not be served unless—perhaps at the same time—other generally expected activities of the health department receive attention.

CREATING PUBLIC CONFIDENCE

The featuring of an important health problem by a county organization has been proved practicable and oftentimes advantageous. This, of course, presupposes effective, clear-cut procedures from which tangible results can be demonstrated with reasonable promptness. An impressive result thus obtained will create public confidence, in turn, enabling the workers to stress other important problems in an orderly manner. Gradually the necessity for maintaining the health service on a creditable basis will come to be recognized and then appropriations from state, county and towns can be obtained to meet the cost of reasonable expansion of the program. The majority of the county health organizations now in existence have been aided, at least in the initial stages, with funds intended for the support of special phases of health work. From 1915 to 1920 the United States Public Health Service and the Rockefeller Foundation assisted in the establishment of such organizations through their interest in measures for combating the filth-borne diseases. Since that time these agencies have supported new county organizations without committing them to feature any special problem. Their objective was a full-time, trained staff and a well-rounded program financed, for each county as early as practicable, entirely with public funds.

Of the 331 county organizations operating at the close of 1926, the Rockefeller Foundation has made contributions toward the budgets of 226, and of these

37 have featured malaria control. The American Child Health Association and the Commonwealth Fund for more than 5 years have contributed to the establishment of county organizations on condition that child welfare activities would be featured. The Milbank Foundation likewise has aided in the organization of county health work with a view to emphasizing tuberculosis control. Judging from the spectacular increase from year to year in the number of county organizations, this principle as a sound procedure by official and voluntary health agencies seems to have been pretty well established. The contributors in behalf of special problems, even though disturbed at times because of limited activities in their special fields, have found consolation in knowing that the personnel supported has learned something of the importance of the special problems, and that the activities probably will be continued from year to year with cumulative results in the special field. Regardless of any special interest in the field of public health, it should be a source of keen satisfaction to any agency to have played a part in bringing into existence a county health organization to serve permanently the health interests of the county.

INFANT WELFARE WORK A UNIVERSAL PROBLEM

None of the special problems mentioned above seem more attractive as a feature for newly created county organizations than the maternity and infancy welfare work in which the U. S. Children's Bureau is particularly interested. Since 1922 this organization has coöperated with state and local boards of health in the support of county health work. Through aid from the Sheppard-Towner fund many units have been established which otherwise could not have been put into operation for years to come. Infant welfare work is a universal problem. It makes its appeal in every community and in almost every home. The methods to be employed have been evolved as an outgrowth of successful experience, and it has been demonstrated that they can be successfully employed by county organizations. Results of thorough work will be reflected in the mortality statistics as promptly or more promptly than in most other activities.

NEED FOR PERMANENT MATERNITY SERVICE

There is no question as to the need of better care for women in the puerperal period. The high maternal mortality rate in the United States is notorious. Practically every community needs better facilities for protecting women in the child-bearing period. The task, like infancy welfare activities, provides work for the health staff every week in the year. Its nature and importance appeal to everyone. Although there is some difference of opinion as to whether the work to be done should be left to the field of clinical medicine or to the field of preventive medicine and public health, the sincere health worker will be interested not so much in who does the work as in the end result.

If the medical profession will proceed to reduce our excessively high maternal mortality, the health worker should, when requested, as far as practicable coöperate. If the physicians make or have every prospect of making reasonable progress, the worker should devote attention to other important duties. If the medical profession, in spite of coöperation offered by the health department, cannot or will not do the work necessary to save the lives and health of women in the child-bearing stage, the problem properly becomes a charge upon the health department.

Personally, if I were a health worker in a county unit I should not undertake any activity which could be considered as belonging to the field of clinical medicine. The practice of medicine should be entirely the province of the practicing physician, who should consider it a part of his duties to practice preventive med-

icine among his own clientele. I should do everything practicable to get physicians to make periodic examinations of the apparently healthy, to urge them to immunize the population to the fullest possible extent, to administer venereal disease treatments, to correct physical defects of school children, and to give adequate care to infants and mothers. Coöperating with the practitioners of medicine and attending to general public health duties which cannot be expected of them will fully occupy the health worker. Only when at any point efforts in this direction repeatedly fail, should I feel justified in taking the next logical step.

It seems to me unnecessary and unwise for the health worker and physician to engage in controversy. There is work enough for all. With the establishment of a fair and reasonable common basis for getting the work done, coöperation and good will should prevail. Any other course will prove costly to all concerned, as the cause of public health will suffer. If the public health officials and the practicing physicians do not agree upon a feasible working plan, the laity may assume leadership in the field of public health and determine, wisely or otherwise, who shall conduct health work and what shall be its character and scope.

RESULTS MEASURED BY MORTALITY STATISTICS

Since the mortality statistics are the best index we have for testing results, it would seem desirable to utilize them in an effort to measure, as far as practicable, the various types of work that have been conducted in maternity and infancy welfare work. Even though effective work in this field should theoretically be quite promptly reflected in the mortality records, we know that it takes considerable time to carry the health education of the masses up to a point where they will improve their ideas, habits and customs. Even if laws calling for procedures recognized by the authorities as most effective could be enacted, they could not be enforced until sanctioned by a majority of the people.

We have seen evidences, certainly in the field of infant welfare, that effective health work over a period of years will influence the infant death rate in a striking manner. The record of Richmond, Virginia, is an impressive example of this type.

Of the 331 county health organizations, 207, or 62.5 per cent, have been established since 1920. It has been difficult to obtain competent personnel. A multitude of problems have claimed attention. Accordingly, it is not reasonable to expect so soon a striking reduction in death rates from special causes. As the maternity and infancy welfare work did not get under way until 1922 or 1923, even less should be expected at this time in the way of death rate reduction in this field.

COMPARATIVE RESULTS IN COUNTIES

In 1924* I collected the mortality figures for typhoid fever for several states that had made considerable progress in the establishment of county health organizations. A group of counties was selected that had been operating on a full-time basis for periods of from 3 to 5 years, and their records were consolidated in order to include as large a population group as practicable when computing the mortality rates. In each state a similar group of counties having no full-time county health organizations was selected and similar computations made. The tables, then, for a series of years gave the mortality record for the entire state, the group of full-time counties, and the group of non-full-time counties, and these records were graphically presented.

Assuming that the rates in both groups of counties and in the state were about the same in the beginning, we should expect the greatest rate reduction to be shown by the full-time group, the least

* Paper read before Conference of State and Provincial Health Authorities, Lansing, Michigan, June 14, 1924. Reprints in limited numbers may be obtained upon request to author, 61 Broadway, New York City.

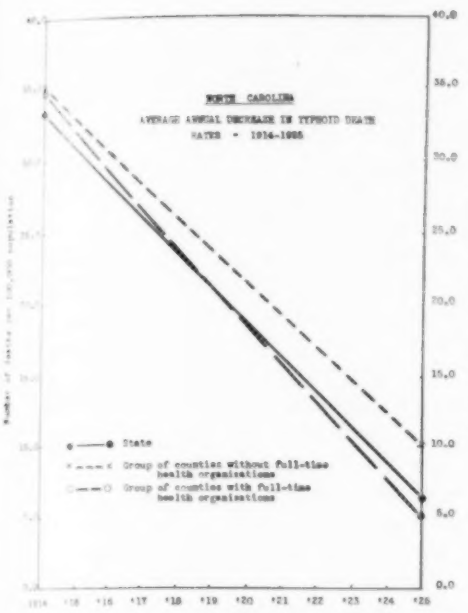
NORTH CAROLINA
AVERAGE ANNUAL DECREASE IN TYPHOID DEATH RATES - 1914-1925
State
Group of counties without full-time health organizations
Group of counties with full-time health organizations

FIG. I—Comparative reduction in the typhoid death rate over a period of years for the State of North Carolina; for a group of counties with full-time health organizations; and for a similar group of counties without full-time health organizations.

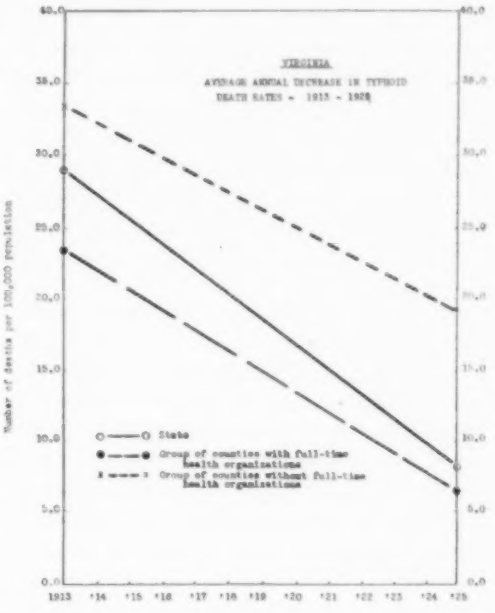
VIRGINIA
AVERAGE ANNUAL DECREASE IN TYPHOID DEATH RATES - 1913 - 1925
Number of deaths per 100,000 population
State
Group of counties with full-time health organizations
Group of counties without full-time health organizations

FIG. II—Comparative reduction in the typhoid death rate over a period of years for the State of Virginia; for a group of counties with full-time health organizations; and for a similar group of counties without full-time organizations.

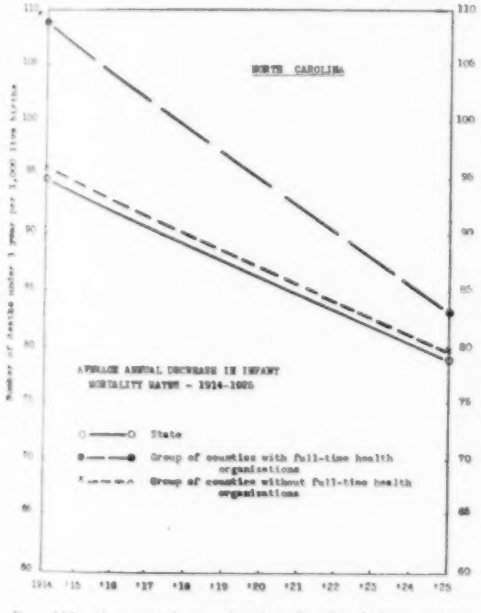
NORTH CAROLINA
AVERAGE ANNUAL DECREASE IN INFANT MORTALITY RATES - 1914-1925
Number of deaths under 1 year per 1,000 live births
State
Group of counties with full-time health organizations
Group of counties without full-time health organizations

FIG. III—Comparative reduction in the infant mortality rate over a period of years for the State of North Carolina; for a group of counties with full-time health organizations; and for a similar group of counties without full-time health organizations.

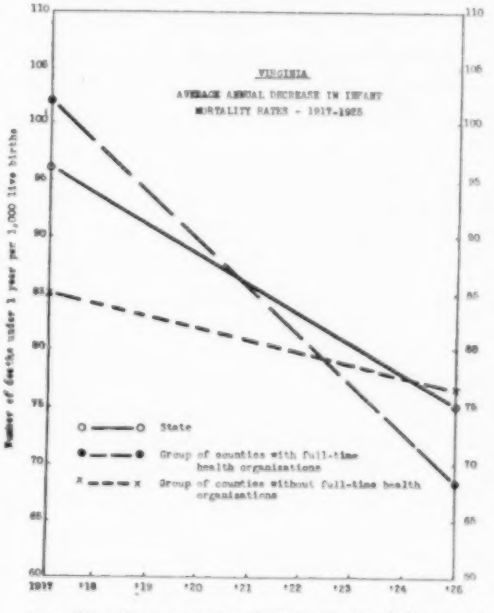
VIRGINIA
AVERAGE ANNUAL DECREASE IN INFANT MORTALITY RATES - 1917-1925
Number of deaths under 1 year per 1,000 live births
State
Group of counties with full-time health organizations
Group of counties without full-time health organizations

FIG. IV—Comparative reduction in the infant mortality rate over a period of years for the State of Virginia; for a group of counties with full-time health organizations; and for a similar group of counties without full-time health organizations.

by the non-full-time group, and an intermediate reduction by the state. If there was a marked difference in the three rates in the beginning, as was the case in a number of instances, we should expect that at least the percentage of reduction on an average in the full-time counties would be greater than in the non-full-time counties or in the state as a whole. Although there were exceptions, the general trend of the various graphs fulfilled these expectations. The graphs have now been extended through the years 1924–1925, and those for Virginia (Fig. I) and North Carolina (Fig. II) are here presented for any interest they may have and to illustrate a method which might be tried for testing the merits of the procedures dealing with infancy welfare.

We have in a few instances undertaken the test relative to infant death rates employing the same states and the same groups of counties that were used in the typhoid studies in order to see what the present situation is and to chart from year to year the changes. The graphs reflecting the infant death rates for the selected areas of Virginia (Fig. III) and North Carolina (Fig. IV) are presented.

It would seem important for each state and county organization to chart by a similar method the various causes of death during recent years, and from time to time, certainly once a year, bring the records up to date in order to ascertain what changes have taken place. Such records should be of inestimable value as a guide in formulating health programs.

My personal view is that the county health unit affords one of the most effective means of dealing with general and special health problems in towns, villages, and rural communities. I should be slow to change this opinion, even if it should not be emphatically and promptly supported by the statistical record suggested above. The county organization is probably permanent, it is expected to have a trained full-time personnel, and the workers in becoming intimately acquainted with the people to be served should win their confidence and coöperation. Each succeeding year should bring increased results. These are fundamental considerations making for adequacy and permanence. No other method of procedure, it would seem, could be expected in the long run to yield equally satisfactory results.

The Typhoid Epidemic in Montreal

THERE HAVE BEEN so many conflicting reports concerning the epidemic of typhoid fever in Montreal, and at the same time a dearth of positive information from the scene of the epidemic, that the JOURNAL has felt it unwise at present to comment editorially on the situation.

It has been reported that five thousand cases have developed in Montreal, though the source of the epidemic is at present uncertain. Apparently no thorough investigation has been undertaken, but the fact that there are trained men on the ground, and the further fact that consultation has been sought with public health experts elsewhere, promise that a thorough study of the health situation of Montreal may be undertaken. A study of an epidemic of this proportion should provide a vast amount of data. Out of the whole situation it may be expected that certain lessons may be drawn suggesting the desirable course of action for all American municipalities whenever an epidemic situation is threatened.

The JOURNAL expects to present in a future issue a report on this matter by a competent observer.

THE HEALTH CENTER*

C. F. WILINSKY, M.D., Fellow A.P.H.A.
Deputy Health Commissioner, Boston, Massachusetts

WE HAVE SEEN an evolution in business life resulting in the department store, housing under one roof shopping opportunities varying from needles and thimbles to automobiles and house lots. In more recent years we have seen the birth, growth and development in the health and welfare field of an institution which has aptly been called the "department store of health," but technically described as the "health center." We commend to business men and others who have community interests this type of institution as the ideal one for health conservation.

The term "health center" covers a variety of types of institutions varying in scope of activities. Some are institutions for the dissemination of health education only, while others may conduct baby conferences or venereal disease clinics. Some may carry on the many functions of the health department while others are miniature dispensaries.

There has been developed an accepted ideal type of health center which combines all of the health agencies, public and private, as well as the welfare agencies, in a selected area, coördinating their activities, and conducting a battle against disease with marked emphasis on prevention.

I would define a health center as "an institution for the promotion of health and welfare of the people, made possible and practical by grouping under one roof all of the public and private health, welfare and relief agencies working in a district, thereby developing better correlation and coördination of effort."

The health center movement may be said to be about 15 years old, first conceived to give health service to a group of people in a localized area by Dr. W. C. White in Pittsburgh, Pennsylvania. A similar plan was adopted in Milwaukee, Wisconsin, where emphasis was laid on child welfare work in a definite area by Wilbur C. Phillips. In 1913, the New York Milk Committee established a health center for little children in the Syrian district. In Cincinnati, Ohio, a definite area was taken up by tuberculosis nurses. In September, 1914, Dr. S. S. Goldwater, then Health Commissioner of New York City, formulated a plan and created a health center on the lower East Side followed by a similar one in Queens. From this grew a chain of 12 municipal health centers with plans formulated, during Dr. Haven Emerson's administration as Health Commissioner, for 53 in all. These were to be linked up closely with voluntary health and social agencies and promised adequate service to as nearly 100 per cent of the people as was humanly possible. Unfortunately, a change of administration nullified this splendid program.

In Philadelphia the Child Federation coöperated with the health department in the creation of health centers, concentrating strongly on infant welfare work.

In 1914, Buffalo opened 5 municipal health centers, and in 1915, both Cleveland and Philadelphia developed additional centers, and in 1916, the Blossom Street Health Unit was opened in Boston. In 1917, there were about a dozen health centers in large cities. In 1919, real growth was noted, with 49 communities

*Read at the National Conference of Catholic Charities at Buffalo, N. Y., September 26, 1926.

having 72 centers, Cleveland with 7, Philadelphia with 8, adding notable contributions to health center extension.

In 1919, under the direction of Dr. Livingston Farrand, the Red Cross took up as a peace-time program the launching of the health center as a nation-wide institution, and local chapters were urged to establish throughout their communities sound public health centers. Three hundred and eighty-five were created, and there are over 1,000 health centers functioning in the United States to-day.

Through its personnel the health center has become the great local medium for the dissemination of the principles of preventive medicine. Sociologists agree that in the health center we have a piece of social machinery of great value in attacking socio-medical problems.

TYPE OF HEALTH CENTERS

The types of health centers created are varied. Some are county demonstrations in which the entire health and welfare activities of a county are pooled, with the services available for the entire county. Alameda County, California, furnishes the most striking example of a county demonstration, with 52 health and social welfare agencies housed together.

Some health centers are centralized and others are decentralized demonstrations. In small cities or towns where practically all of the health, social and welfare activities are housed in one health center, there is created a centralized type. In the larger cities there are decentralized activities with a chain of health centers serving the various sections in which they are located, with responsible administration in a central office. Philadelphia, Pennsylvania, with 10; Cleveland, Ohio, with 7; and St. Louis, Missouri, with 10, are examples of decentralized health center activities in large cities. A brief survey of a few cities, counties and towns in the United States made recently shows the existing health centers as listed opposite.

There are many health centers scattered throughout the smaller cities of New York due to the stimulus of the New York State Health Department, which strongly endorses health center development.

There are several very excellent health centers in New York City, supported by voluntary agencies. Among these the East Harlem Health Center is prominent. This is financed by the American Red Cross and houses a large number of health, social and relief agencies, including the various branches of the New York Health Department. It has done most excellent work and occupies a prominent place among American health centers.

The recently launched Bellevue-Yorkville Health Demonstration is a development of a high type health center, housing many official and voluntary agencies headed by the city health department, which has brought to the doors of the community its various services. The Bowling Green and Judson Health Centers in New York City may also be mentioned.

EXISTING HEALTH CENTERS

Buffalo, N. Y.	7	Cleveland, Ohio	7
Cincinnati, Ohio	1	Detroit, Mich.	Several
St. Louis, Mo.	11	Albany, N. Y.	2
Baltimore, Md.	1	Milwaukee, Wis.	3
Philadelphia, Penn.	10	Minneapolis, Minn.	1
Washington, D. C.	8	New Haven, Conn.	1
Manchester, N. H.	1	Portland, Maine	2
Augusta, Maine	1	Canton, Ohio	1
Knoxville, Tenn.	1	Harrisburg, Penn.	1
Dunkirk, N. Y.	1	Oswego, N. Y.	1
Binghamton, N. Y.	1	Schenectady, N. Y.	1

ESTABLISHMENT OF A HEALTH CENTER

The fundamental principle in the creation of a practical, modern health center is the correlation of all the health and social agencies, whether public or private, under one roof, with the beneficent result derived from the contact of the workers. From this must result a coördination of the activities with the elimination of duplications and waste of effort.

In the planning of a health center, location is an essential factor, and it must be apparent that logically the usual ideal location will be where the need is greatest for teaching the lesson of preventive medicine. In cities it will naturally be

in that neighborhood where there are problems of sanitation and hygiene, where baby welfare must be emphasized, where improvement of housing conditions must be sought, and where a campaign against tuberculosis may need to be waged.

An earnest endeavor should be made to explain and prove to the people in the district that the aim and purpose of the center is to help the people, to keep them well, and to render every human service possible for the prevention of disease. It becomes the duty of the newly created health center to interest itself in every condition detrimental to the health of the neighborhood in which it functions.

ESSENTIAL AGENCIES

Only by convincing the community that our program is sound, can we thoroughly establish ourselves on a firm and successful footing. All local existing health and welfare agencies, public and private, should be carefully studied and all essential activities of merit included in the proposed development. Local conditions may determine essential services needed. Existing gaps and needs in the field of health and welfare work will be recognized and filled.

In order to promote properly the principles of preventive medicine it is important that only such services as are truly prophylactic shall be a part of the health center, leaving the curative field to the practitioner, hospital and existing dispensaries. Only in that way can the health center be made to emphasize prevention of disease.

It is assumed that in the modern health center will be found the various activities of the health department, which must necessarily include maternal and baby welfare, epidemiological service, food and sanitary inspectors, dental service for young children, facilities for transmission of sera therapy for the prevention of various communicable diseases; in short, a decentralization of board of health activities, so that service may be brought right into the neighborhood.

Health being a positive thing, and disease a negative abnormal condition, it becomes the paramount duty of those responsible to do everything possible to maintain the health of the people by a constant campaign of disease prevention and health education, and the health center must become the local focus for health propaganda.

Nursing organizations offering various services, anti-tuberculosis agencies waging a campaign against tuberculosis, school physicians and school nurses in the district, and many others can be enumerated as essential cogs in the health center machinery.

It is obvious to every well trained physician and social worker that the connection between poverty and disease is so close that there must be coöperation between the health workers and the family welfare workers. Bringing together these two distinct groups in the health center results in time saving and more effective work.

It must be remembered that the modern physician on one hand is being trained for the field of preventive as well as curative medicine. On the other hand, campaigns are being waged for the education of the public with regard to the value of prophylaxis, routine medical examinations and other available services for the promotion of health and longevity.

The private physician is the most important asset in public health work, therefore, he must be properly regarded as a very important factor in the success of a local health center.

While there has been much progress in disseminating public health knowledge, the work is still in its early stages. We must disseminate fully the knowledge we have of hygienic methods of living during infancy, childhood, adolescence and maturity. Such an educational health program aims and hopes in time to reduce to a minimum the need of medical care. A proper effort along educational lines from a health center usually results in a

splendid response by the people, who, after all, want to be well.

ORGANIZATION

The success of the individual center depends, of course, upon a proper organization, with proper coöperation by all contributing agencies. The director must be surrounded by a representative advisory committee, so far as possible composed of people actively interested in the leading medical, nursing and welfare organizations in the city and district where the health center exists. We cannot emphasize too strongly the necessity for the coöperation of the physician in the district, who should be consulted as to the plans and policies of the health center, and who should function if possible in the preventive program.

The ideal principle at the present moment seems to be the dissemination of knowledge of the value of prevention of disease with marked emphasis on actual prophylaxis. If we believe in the progressive principles of preventive medicine developed in recent years, we must adhere as closely as possible to the following program.

PROGRAM

We must begin by giving the expectant mother proper prenatal instruction. Upon the birth of a child, infant welfare guidance must be provided, and after 2 years of age the youngster must be carefully carried through the preschool age period, and during this most important cycle, which has been called the "neglected age," the parents should receive proper instructions, including principles of prophylactic dental service, diet and nutrition, mental hygiene and correct posture, so that we may be able to turn over to the school nurse and school physician, for their watchful care, a child physically able to cope with the classroom problems. In adolescence and adult life we must impress upon the individual the value and virtue of routine medical examinations which may be properly defined as physical stocktaking. Emphasis must then be laid on careful living, proper hygiene, etc.

In the creation and rounding out of the above service a health center becomes a powerful, potent factor in the life of the individual and becomes a community house where one will come for health and welfare relief.

OBJECTIVE OF THE HEALTH CENTER

The health center should link together the medical, nursing, social, instructive and charitable organizations already existing in a given district. It should aim to create a clearing house where preventive nursing, educational and relief work may be done with the least duplication of effort, friction or delay.

It has been proved that people properly approached and acquainted with the value and virtue of such service will speedily avail themselves of the opportunity.

BOSTON'S HEALTH CENTER DEVELOPMENT

In view of the progressive health center development in Boston it is pertinent at this time to trace the history, formation, and method of carrying on the health unit activities in this city.

The Blossom Street Health Unit was opened in 1916. It was supported by the Health Department of the City of Boston. The following agencies serving this district combined in the work: Consumptives Hospital Department, Instructive District Nursing Asociation, Milk and Baby Hygiene Association, visiting physician of the Boston Dispensary and the Hebrew Federated Charities.

All of these organizations were functioning in the community at the time, but scattered in different headquarters, with no two agencies housed under one roof. Briefly, a call for a district physician for the poor had to be left at either a drug store or at a settlement house. A request for a visiting nurse had to be left at a church, where nurses' headquarters were located. A desire for vaccination or other health department services either had to

be obtained at the Chardon Street Home or at the health department headquarters. The Boston Sanatorium nurse for consumptives had her headquarters at the Elizabeth Peabody House and at another private residence, and the Jewish Federated Charities had an office of their own in the district.

All of these agencies were doing splendid work in the district, but the value of bringing them together under one roof, and correlating their activities can be appreciated by any analytical mind. The benefit to the community can readily be seen, and the response immediately proved the long felt want for such a center.

Branches of these original agencies and of a number of others are now housed at each Boston health unit. These branches contribute tremendously to the program of coöperation and proper health and welfare services to the people of the district in which the health units are located.

An endeavor was immediately made to familiarize the resident population with the aims, endeavors, and purpose of the health unit by health exhibits, baby shows and lectures.

Well organized child health clinics for both the baby and the preschool age child are being carried on, pediatricians connected with the Harvard Medical School furnishing the medical service. The clinic is used as a teaching center for students in the medical school. Periodic health examinations for adults are given by the general practitioners of the community. In this way not only is there aroused a community interest in the relative value of the periodic health examination, but the practicing physician is beginning to carry on this work as a part of the routine office practice, his interest, in a measure, being created in this work at the health unit. The establishment of a habit-forming clinic for the eradication of the bad habits in the preschool age child is supplying a need for the prevention of future delinquency. There are dental, nutrition, and posture clinics, and a splendidly functioning bedside service under the auspices of the Community Health Association. It is also the call station of the district physician and the headquarters of the tuberculosis nurses. Welfare agencies of all creeds and denominations make the health units their headquarters.

INFLUENCES OF THE HEALTH CENTER

The value of this work and the community's reaction to the first health unit may be best measured by its extension to other sections of the city. The expansion of this work has been hastened by the decision of the George Robert White Fund (a most generous and munificent bequest of six million dollars to the City of Boston, intended to be used for the erection of works of public utility which may best serve the citizens of the city) to erect a chain of health units where they appear to be needed most.

The North End Health Unit, the first one to be erected from the income of this fund, has been functioning almost two years and is carrying on a program similar to that of Blossom Street. A development of the North End Health Unit roof is a decentralized preventorium conducted during the summer months, with a group of selected children who have been exposed to tuberculosis and who are malnourished. These children spend the entire day upon the roof obtaining their meals there. The day is divided into organized recreation, health education and rest. A decided gain and improvement has been noted in these children and it is planned to carry on this work on the roof of all the other units.

The East Boston health unit recently dedicated is actively functioning, duplicating the program carried on at the other health units. A third is being erected in South Boston, making a chain of four health units, and at least three more are planned.

Without desiring to stress too much the importance of comparisons of the death rate in a community in which a health center is functioning and other sections

where there is none, it is, nevertheless, a significant fact that the reports of the prominent East Harlem Health Center, the Halifax and New Haven Health Centers, as well as the Boston Health Center, show a materially lower death rate in the section where the health center is located as against other sections of the community where no center exists.

I am sure one must agree that there can be nothing but beneficial results, both to the community in which the center is located and to the workers connected with the units, who are able to do their work without any waste of energy or duplication of effort.

The one who visualizes a miniature health department, housing every social, nursing, relief and welfare agency of a city, leaving out no function for teaching preventive medicine, promoting general health education and assisting in the relief of the sick and distressed, has a true conception of the modern health center.

We have apparently found a sound vehicle for the dissemination of the principles of preventive medicine, with consequent reduction of morbidity.

AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS—TWELFTH ANNUAL MEETING

THE TWELFTH ANNUAL MEETING of the American Association of Industrial Physicians and Surgeons was held at Johns Hopkins School of Hygiene and Public Health, Baltimore, Maryland, May 16 and 17.

In his opening address, Dr. William H. Howell, Dean of the School, admitted that few American medical students have shown the courage to brave the hazards and insecurities of a public health career. On the other hand, many foreign students have enrolled.

In his discussion on industrial eye injuries, Dr. C. A. Clapp described the new standards of estimating loss of visual efficiency as follows: (1) Acuity, distant and close; (2) Field; (3) Motor.

The need of research on the causes of the common cold and the great loss of time therefrom by many industrial workers, was emphasized by Dr. W. H. Frost in reviewing his recent survey. Dr. C. H. Watson spoke on the measures used by the American Telegraph and Telephone Company to prevent loss of time due to the common cold.

One of the outstanding contributions to the session, and of especial interest to industrial physicians, was the paper on Traumatic Neurosis by Dr. Lewellys F. Barker. "Covetous neurosis," he said, more clearly defines this disease, even though the desire for compensation may be and often is subconscious. Harboring the ideas of obtaining compensation for even a short period produces neurosis, which is almost instantly cured by a satisfactory and final settlement. "A-philo-pone" is a term recently coined by a German writer, signifying fear of work. Individuals with this fear are found to be especially susceptible to traumatic neurosis. Where mental conflicts are lacking, Dr. Barker pointed out, as in a wounded war prisoner, neurosis seldom develops.

Carbon monoxide poisoning was the subject of a paper by Dr. A. R. Meyer, which was discussed by Dr. R. R. Sayers.

The delegates to the meeting visited the Bethlehem Steel Corporation plant at Sparrows Point.

At a dinner session Dr. Guy L. Kiefer, Health Commissioner of Michigan, told about the activities of the State Health Department of Michigan, referring specially to the close relationship of the State Department to industrial medicine. He urged that there be greater coöperation to spread industrial medicine supervision, as a public health measure.

At the election of officers, Dr. T. R. Crowder of Chicago succeeded Dr. William A. Sawyer of Rochester as President, and Dr. F. L. Rector of Chicago was reëlected Secretary-Treasurer.—Reported by A. B. Emmons, 2d, M.D.

WATER SUPPLY AND PURIFICATION *

FOLLOWING a precedent established several years ago, this committee presents herewith a brief report calling attention to outstanding current items of importance in the field of water supply and purification.

TYPHOID FEVER INCREASE IN 1925

The substantial and widespread increase in typhoid fever in the United States during 1925 demands consideration by all engaged directly or indirectly in public health work. The reason for this increase is not apparent. No evidence has been advanced indicating that public water supplies have played an important part in the increase, but in the absence of the epidemiological facts public water supplies cannot be exonerated completely. The suggestion has been made that the protective effect afforded by the Army inoculations of 1917–1918 may be wearing off, thus destroying the immunity of a substantial part of the population. If this accounts for the increase it indicates that foci of typhoid fever infection have continued to exist during the years since 1918 and that the steady reduction of typhoid occurrence in recent years has been due to the immunity of a substantial part of the male population of typhoid age. To check the increase and resume the steady reduction in typhoid fever, it is therefore necessary to restore immunity or to increase efforts in control of all causes of the disease.

As the public water supply is recognized as being the most important potential cause of typhoid fever, any increase in the occurrence of the disease, whatever the cause may be, demands increased vigilance in the protection and purification of public water supplies.

While the typhoid fever increase in 1925 may not be significant of a general relaxation in the prevention of the disease it is a forceful reminder of the necessity of continuing the effective work thus far performed in maintaining public water supplies at a standard of unquestioned safety.

CONSTRUCTIVE EFFORTS TO CONTROL STREAM POLLUTION

It is a well known fact that, with relatively few exceptions, public water supplies of surface origin which meet the present rigid standards of sanitary quality, do so as a result of efficient processes of purification rather than protection of the water supply from contamination. In fact there has been a limited accomplishment in the United States as a whole in actual prevention and correction of the contamination of surface sources of water supply and reliance has generally been placed upon natural agencies and the water purification process to provide the necessary protection of the public health. Increased efficiency, improved methods and resourceful operation in water purification practice have been necessary in many instances to keep pace with the deterioration of quality of the sources of supply which are receiving year by year increasing quantities of sewage and other polluting wastes. In fact many water purification plants are now called upon to carry an enormous burden due to the condition of the raw water used.

Improvement is indicated by the constructive efforts which have been initiated recently by the health departments of several states; notably, Pennsylvania, Ohio, West Virginia, Wisconsin, New York, Maryland, and Michigan. The interstate

* Report of the Committee on Water Supply and Purification presented to the Public Health Engineering Section of the American Public Health Association at the Fifty-fifth Annual Meeting at Buffalo, N. Y., October, 1926.

phases of the question have been recognized through agreements executed by the health departments of these and other states. These efforts are being directed in a sane and equitable manner with cooperation of municipalities and industries and offer promise of effective control of stream pollution, with the protection of public water supplies as the outstanding result.

Mention should also be made of the recent recognition of the significance of the pollution of water supplies in relation to performance of purification plants. This was a phase of the investigations of the pollution of the boundary waters made by the International Joint Commission more than ten years ago. Recently, added emphasis has been placed upon this question by the work of the U. S. Public Health Service and by a committee of the American Water Works Association.

IMPROVEMENTS IN WATER PURIFICATION PRACTICES

Of the recent developments in methods and practices of water purification, the following should be mentioned:

Improved Coagulation and Basin Efficiency—In several instances it has been found that better coagulation basin efficiency may be secured by operation of two basins in series and by application of the chemicals to the water prior to delivery to each basin. The treatment of waters of high color and low alkalinity has been successfully accomplished by application of alum prior to the first basin and lime prior to the second (Wilmington, North Carolina). In the treatment of the heavily polluted water of the Ohio River it has been found advantageous to apply successive doses of coagulant in this manner and thus reduce the burden upon filtration and permit suspension of chlorination when this treatment becomes objectionable due to production of offensive tastes (Ironton, Portsmouth, Toronto and Cincinnati, Ohio). Double coagulation has also been provided in the new works for Kansas City, Missouri.

Mention should also be made of adoption of long period (3 days) coagulation basins in connection with filtration of the new water supply for Providence, Rhode Island, following the precedent established at Springfield, Massachusetts. The long basin period is provided to permit efficient color removal with moderate rates of alum treatment.

Better coagulation and basin efficiency are being obtained at many recently installed plants throughout the United States by reason of the use of mechanical mixing tanks instead of baffled mixing chambers. With the use of mechanical mixing tanks the mixing operation following the application of chemicals is under accurate control, both period and violence of agitation being subject to variation to meet the requirements. As a result the reactions are more nearly completed and basin efficiency is improved. Many of the newer plants designed for coagulation as well as for softening have been equipped with mechanical mixing tanks.

Adjustment of hydrogen-ion concentration as a means of securing improved coagulation efficiency has also been found beneficial in the operation of many plants throughout the United States. Carbon dioxide is being used at Lima and Ironton, Ohio, to reduce pH value and produce optimum coagulation without excessive use of coagulant.

Double Chlorination—This procedure in connection with filtration involves chlorination of the raw water as a primary step and chlorination of the filtered water as a final treatment. Double chlorination in this manner has been successfully used in a number of plants handling raw waters of considerable degree of pollution. Its use has been reported at Norfolk and Newport News, Virginia, Rensselaer, Poughkeepsie, Rochester (Lake Ontario Supply) and Niagara Falls, New York. Attempts to use double chlorination at Ironton, Ohio, proved unsatisfactory, not from the standpoint of bacterial efficiency, but due

to the presence of phenol in the raw water which renders chlorination objectionable due to offensive tastes produced. Where double chlorination is applicable it has been found advantageous in controlling the bacterial quality of the filter influent water, thus making the filter performance constant and reliable; in enabling the final treatment to function as a factor of safety; and in minimizing the detrimental effect of interruption of service of either chlorination apparatus.

Chlorination of Small Gravity Water Supplies — Many small municipalities throughout the country are served by gravity water systems comprising impounding reservoirs on upland streams at sufficient elevation to furnish pressure for distribution without pumping.

Such supplies are seldom filtered as the reservoirs usually furnish water of satisfactory appearance. While supplies of this class are usually not exposed to constant or regular pollution they are at all times exposed to accidental and incidental pollution, the result of which may be fully as serious. Many typhoid fever epidemics have been due to the unforeseen contamination of such water supplies. It is now generally agreed that continuous disinfection of the supply should be the minimum safeguard provided.

Due to the conditions usually surrounding such supplies, considerable difficulty has resulted in securing satisfactory treatment with the use of equipment designed to deliver at a given adjustment, a constant quantity of the disinfectant used. As the flow of water to be treated varies widely, this type of equipment requires regular attention and adjustment to insure continuous treatment at the proper rate and, owing to the isolated location of such supplies as well as the financial limitations of the smaller municipalities, such attention is generally impracticable.

Except in those cases where frequent attention can be given to the operation of the equipment, the only solution of this problem appears to be the use of equipment which will vary the quantity of disinfectant applied according to the rate of flow of the water to be treated. It is fortunate, therefore, that such equipment has been developed and placed on the market recently, thus permitting the proper disinfection of water supplies of this class. While careful supervision of such equipment is necessary its automatic features reduce to a minimum the attention required.

IODINE TREATMENT OF WATER

There is little change to record in the practice of adding sodium iodide to public water supplies for the purpose of goiter prevention. Rochester continues the iodization of its water supply with reported marked benefits in the way of reduction of goiter symptoms among the school population. Opinion continues to be divided as to the expediency of utilizing the public water supply as a medium of supplying iodine to that portion of the population requiring it.

Discussion of causes and remedies for goiter has had the effect of stimulating goiter censuses in several of the states and of causing studies to be made of the iodine content of various water supplies for the purpose of correlation. Among the states where systematic work is being done along these lines are Minnesota, Michigan, Utah, Kansas, Pennsylvania, Massachusetts and New Jersey. Iodine, though one of the most attenuated constituents in water, is occasionally finding a place on water analysis reports along with other mineral constituents.

OUTSTANDING RECENT CONSTRUCTION

Extensive construction work on water supply equipment during the year has related principally to additions to existing works.

New York City—Completion of the Gilboa Dam and Shandekan Tunnel marks the virtual completion of a very important step in the development of the Catskill water supply system, although stored water from the new impounding areas will not be available before 1927.

St. Louis, Missouri—Substantial progress has been made on the construction of the new filtration plant located to the west of the city and taking its supply from the Missouri River.

Baltimore, Maryland—Additional filters practically doubling the original Monte Bello installation were nearly completed.

Cleveland, Ohio—Completion of the Baldwin Filtration Plant to supplement the existing Division Avenue plant, made filtered water available to the entire city.

Providence, Rhode Island—The new rapid sand filters have been completed at Providence, to supplant the existing slow sand filters.

Springfield, Massachusetts—Additional slow sand filters have been installed.

Philadelphia, Pennsylvania—Work was started on rapid sand filters at Belmont. Besides the additions to existing plants there has been notable construction work on filters for supplies not previously filtered.

Kansas City, Missouri—Continued progress has been made on the new works at Kansas City, although the works will not be finally completed before 1928.

Buffalo, New York—The new filters of 160 m.g.d. capacity were placed in service, July, 1926. Other filter plants placed in service were Wheeling, West Virginia; Sacramento, California; Springfield, Illinois; and Essex Border Cities, Ontario.

There has been a distinct swing toward softening of municipal supplies and recent plants have included recarbonation methods for obviating incrustation troubles. The new softening plants at Newark, Ohio; Tampa, Florida; Austin, Texas; Oklahoma City, Oklahoma; and Piqua, Ohio; have embodied recarbonation. The Ohio Valley Water Company plant just outside of Pittsburgh is unusual among municipal softening plants on account of using zeolite softening.

Of considerable interest in water supply circles was the formation of the Mahoning Valley Sanitary District in Ohio

SUGGESTED FORM FOR CENSUS OF PURIFICATION OF MUNICIPAL WATER SUPPLIES IN THE UNITED STATES AS OF THE YEAR 1925

1. Municipality..... Population 1925.....
2. Ownership.....
3. Source of supply.....
4. Type of purification or treatment plant (check).
   a—Disinfection only.
   b—Coagulation only.
   c—Rapid sand filtration gravity—pressure* with coagulation.
   d—Rapid sand filtration gravity—pressure* with coagulation and disinfection.
   e—Rapid sand filtration gravity—pressure* with softening.
   f—Rapid sand filtration gravity—pressure* with softening and disinfection.
   * Strike out one to indicate whether gravity or pressure.
   g—Slow sand filtration.
   h—Slow sand filtration with coagulation.
   i—Slow sand filtration with coagulation and disinfection.
   j—Other type (describe).....
5. Chemicals used: .....
6. Laboratory control; continuous; intermittent; none.*
   * Strike out two.
7. Date of installation and enlargements.....
8. Filter area 1925: .....; Basis used for calculation of nominal capacity: .....gallons per acre per 24 hrs.
9. Nominal capacity 1925: .....gallons per 24 hrs.
10. Average treated 1925: .....gallons per 24 hrs.
11. Population supplied 1925: .....
12. Answers supplied by (Name, Title, and Address).....
.....

which was organized to provide a unified water supply of satisfactory quality for the cities of Youngstown and Niles which are now dependent upon a supply very grossly polluted with sewage and industrial wastes.

PROPOSED FILTRATION PLANT CENSUS

The members of this committee are agreed that a census of water purification should be taken at 5-year intervals and the committee had hoped to present such a census for the year 1925 as a part of its report for the present year. It has been impossible to do so and the committee has done nothing more than give the subject of a census general consideration.

This committee suggests that data should be secured regarding the purification of each water supply serving a municipality in this country. The first census would apply to the year 1925 and the information should be brought up to date for each 5-year period thereafter. The taking of such a census will require much work and it appears necessary to enlist the coöperation of the state sanitary engineer or other corresponding official of each state in order to make it practicable.

This committee is hopeful that there will be general agreement as to the desirability of such a census, that the succeeding committee for 1927 will pursue this matter, and that general assistance will be accorded that committee in making the census thorough and accurate.

The accompanying census form is suggested as a means of obtaining general data regarding each installation for purification of a municipal water supply.

W. H. DITTOE, *Chairman*
G. F. CATLETT
C. R. FOX
C. G. GILLESPIE
GEO. W. FULLER

Leading Articles in August Journal

PRELIMINARY PROGRAM OF FIFTY-SIXTH ANNUAL MEETING

PUBLIC HEALTH, A PUBLIC BUSINESS
W. H. Peters

THE CONSTITUTIONAL, STATUTORY AND ADMINISTRATIVE ASPECTS OF VITAL STATISTICS
W. Thurber Fales, Edwin W. Kopf and James A. Tobey

SCHOOL NURSING PROCEDURE
Beatrice Short

STEREOSCOPE X-RAY EXAMINATION OF SANDSTONE QUARRY WORKERS
Daniel J. Kindel and Emery R. Hayhurst

ELIMINATING POLLUTION FROM THE GREAT LAKES AND ST. LAWRENCE WATERWAYS

THIS is the last of the series of papers on the *Progress in Eliminating Pollution from the Great Lakes and St. Lawrence Waterways* published in the JOURNAL, which were read before the Public Health Engineering Section of the American Public Health Association at its Fifty-fifth Annual Meeting at Buffalo, New York, October 12, 1926.

Authors who have contributed to this series are: Allen J. McLaughlin, M.D., J. W. Ellms, George H. Ferguson, and Langdon Pearse.

LAKE HURON, ST. CLAIR RIVER AND DETROIT RIVER DISTRICT*†

F. GARDNER LEGG

Sanitary Engineer, Detroit Department of Health, Detroit, Michigan

REGARDING the improvements made in the communities bordering upon Lake Huron, it may be taken for granted that such changes as have been made in water supply or sewerage systems in these municipalities have been solely for local reasons, such as excluding contamination by boat traffic. The question of pollution crossing the International Boundary does not appear to be of importance. However, in all cases where improvements have been made, it seems logical that such sanitary advances have, in a measure, been the result of enlightened public opinion. This has resulted no doubt from the investigations of the U. S. Public Health Service by Dr. A. J. McLaughlin, the International Joint Commission, and the active coöperation of state and provincial health departments.

Cheboygan—Conditions regarding water supply and sewage collection and disposal in this city are the same as existed at the time of the final report in 1918.

Alpena—Alpena has been operating a water filtration plant for about four years. Some intercepting sewers have been installed with the ultimate objective of providing sewage treatment of some description.

Saginaw—Engineers are now designing a water filtration plant. The source of raw water, however, I believe has not as yet been definitely indicated. Serious consideration is being given to the problem of sewage collection which in all

* This paper considers the improvements tending toward the elimination of pollution of boundary waters since the final report of the International Joint Commission.

† The author considers it advisable to offer an apology, as the time allotted for the preparation of this paper has been so limited that sufficient opportunity was not afforded for the collection of data from authentic sources from every community in this particular district. Should any statement made herein be contrary to fact, or fail to give proper credit for improvements where credit may be due, it is hoped that such discrepancies will be courteously disregarded.

probability will in the future be linked with sewage treatment.

Bay City—A water filtration plant has been put into operation since the Commission report. As a direct result of tastes, brought about by the discharge of industrial wastes into the Saginaw River Drainage Basin, considerable has been accomplished in eliminating the objectionable discharge from industries in this drainage area. Nothing definite is proposed for sewage collection or treatment at this time.

Harbor Beach—A pressure filter followed by chlorination has been operating as an adjunct to the municipal water supply for about a year. A sewage collecting system linked with treatment by Imhoff tanks and sand filtration has been operating for about ten years.

CANADIAN CITIES PROTECTED

Unfortunately, the writer has not been able to obtain information covering those Canadian cities bordering on Lake Huron or tributary to its waters, nor to those communities along the St. Clair River and the easterly side of St. Clair Lake. It is reasonable to expect, however, that when local conditions required, such precautionary measures as were necessary to correct dangerous existing conditions have been adopted under the supervision of the Provincial Board of Health.

Port Huron—The water supply has been treated with chlorine for a considerable time. Practically all sewage is discharged into the Black River. Engineers are making a study of sewage collection and disposal, and tentative designs of interceptors have been prepared and a site for sewage treatment selected.

Marysville—Water supply is taken from the Port Huron system. No system of sewage collection or treatment is under consideration at this time.

St. Clair—Water chlorinated at present. This city is seriously considering the erection of a water filtration plant. Nothing definite has been prepared with regard to sewage collection and treatment.

Marine City—Water now chlorinated and a filtration plant is being seriously considered. No noteworthy consideration has been given to the problem of sewage collection or disposal.

Algonac—Algonac is not troubled with high turbidity in its water supply. Chlorination is now employed and filtration is not considered at this time. Nothing definite has been considered for sewage collection and treatment.

Mt. Clemens—Water supply is derived from wells. Sewage is discharged into the Clinton River. Sewage collection and treatment is not under serious consideration at this time.

Detroit—Detroit's problem embraces the communities immediately above and below the city, the entire area having increased its population very rapidly. Although nothing has been done structurally to curb the pollution of the Detroit River, the water supplies of Highland Park and Detroit have been improved by the installation of filtration plants.

PARTICIPATION OF MUNICIPAL AUTHORITIES

The question of sewage collection and treatment is the most important matter under consideration by the municipal authorities at this time. A very comprehensive report has been submitted by a board of engineers consisting of Harrison P. Eddy, John H. Gregory and Clarence W. Hubbell, recommending a large interceptor paralleling the river, leading to a single treatment plant below the city, for which Imhoff tanks and chlorination are recommended. The City Council has not as yet adopted the report in its entirety. However, for the protection of the city's water supply, a portion of the interceptor has been approved and is now under construction. The consideration of recommendations covering sewage treatment is the apparent cause for delay in the adoption of the entire report, as some members of the Council are not convinced that Imhoff tanks should be installed in preference to fine screens. It is expected that some decision will be reached regarding

the type of sewage treatment in the course of a few weeks.

The recommended program calls for a total expenditure of $39,600,000 on the basis of serving a population of 2,400,000. Should the recommendations be adopted and followed, the construction will be spread over a period of seven years.

River Rouge—River Rouge is supplied with water from the Detroit mains and is so located that the existing sewers may be collected and conducted by an interceptor to the proposed treatment plant for Detroit.

Fordson—Fordson is also supplied with Detroit city water. But it will not be tributary to the proposed sewage treatment plant, as a complete sewerage system with treatment works consisting of Imhoff tanks has been installed since 1918.

Dearborn—The water supply for this community is taken from the Rouge River and filtered. Sewage is treated by Imhoff tanks and discharged into the Rouge below the water intake. Both filtration and sewage treatment works have been in operation for a number of years.

Wyandotte—A grossly polluted water taken from the river below Detroit and subjected to filtration furnishes Wyandotte's municipal supply. The plant has been in operation for about six years and is giving excellent results notwithstanding the fact that the raw water is unreasonably polluted. Similar conditions apply in Sibley and Trenton, these plants having been put into operation since the commission's last report.

The sewage from these communities is discharged into the river without treatment and no information regarding elimination of this pollution is available.

WATER SUPPLY OF CANADIAN TOWNS

On the Canadian side of the river there are the municipalities of Riverside, Ford City, Walkerville, Windsor, Sandwich, Sandwich West, Ojibway, and Lasalle. These communities are, with the exception of Riverside, all supplied with filtered water from the plant operated by the Border Cities Utility Commission. The plant was put into operation in May of this year. Riverside obtains a portion of its supply from the pressure filter plant of the Eauclaire Water Company and the remainder from that of the commission's plant above mentioned.

With the exception of Riverside all sewers have been intercepted and carried below the water works intake. An activated sludge plant has been provided to treat the sewage from Riverside as a result of the insistence of the Provincial Board of Health that raw sewage could not be discharged above the new intake of the Border Cities Utilities plant.

Tentative plans have been considered for the ultimate collection and treatment of the sewage from these Canadian border cities by the Utilities Commission.

Amherstburg—This city has been supplied with filtered water from a plant installed by the Brunner-Mond Company since 1920. Nothing definite has been proposed or undertaken for the collection or treatment of the sewage from this community.

In summing up the remedial measures promulgated since the 1918 report, it is apparent that although the pollution of the waters in this particular district has undoubtedly increased due to urban development, nevertheless protection of local water supplies by filtration has materially reduced typhoid death rates. Also, one cannot help being impressed with the fact that this review clearly indicates that considerable progress may soon be expected in the elimination of the discharge of raw sewage into the boundary waters of this district.

THE "NORMAL" FOR EPIDEMIC DISEASES*

A. W. HEDRICH, Fellow A.P.H.A.

Instructor in Vital Statistics, School of Hygiene and Public Health, The Johns Hopkins University, Baltimore, Maryland

FOR MOST epidemic diseases the expression "normal" is coming to mean a sort of statistical Santa Claus—something rather unreal and abstract, but withal very useful. And like Santa Claus, the "normal" has been largely the result of incomplete recognition of the forces behind the visible results.

The older epidemiology recognized two main zones of incidence. The usual or "normal" incidence was called "endemic"; and pronounced excesses were termed "epidemic." The idea of normalcy included the well-known seasonal cycle of diseases; therefore an average of some kind was taken of the non-epidemic† incidence for each week or month of the year, and these averages, when joined together into a curve gave a picture of the endemic seasonal wave.

THE ANATOMY OF THE MEASLES CURVE

With the decreasing frequency of great sporadic epidemics, such as might arise from infected milk or water, it has become easier to detect for many diseases, at least three types of fairly systematic component movements—one continuous, the other two recurrent, or cyclic. These were referred to in an earlier paper [1, 7] but may be briefly reviewed here:

1. *The secular, or long-time trend* is a gradual rise or decline, due to such factors as changes in the population, in completeness of reporting, in medical and public health activities, etc. Chart I illustrates the secular trend of measles cases and case rates in Chicago. (The picture may be quite different in smaller communities.)

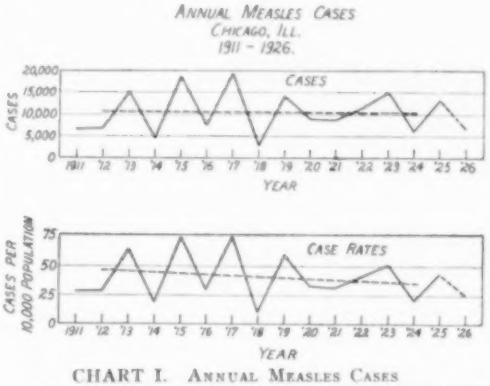

CHART I. Annual Measles Cases

Case rates trend downward, but absolute cases trend horizontally. Note the tendency, with interruptions, to a cycle of about 2 years' length.

2. *The seasonal cycle* is shown in Chart II. Certain striking tendencies in the curve merit emphasis:

a. A very definite swing occurs every year without exception.

b. The lowest month is almost invariably September.

c. The "legs" of the annual curves approach straight lines on the logarithmic scale; that is, the rise and fall of these portions is approximately geometric. The rate of increase averages about 100 per cent per month.

d. Although the proportionate rise is enormous, the high point comes almost invariably in April or May. During

* Papers from the Department of Biometry and Public Health, No. 127. Read before the Vital Statistics Section of the American Public Health Association at the Fifty-fifth Annual Meeting at Buffalo, N. Y., October 14, 1926.

† During the discussion of this paper a vote of the audience indicated that the general concept of the word "epidemic" included the idea of extra-annual cycles and of sporadic outbreaks, but not the regular seasonal rise. The word is used in this accepted sense, although on theoretical grounds it would seem more appropriate to group the annual and the extra-annual cycles under the same generic term.

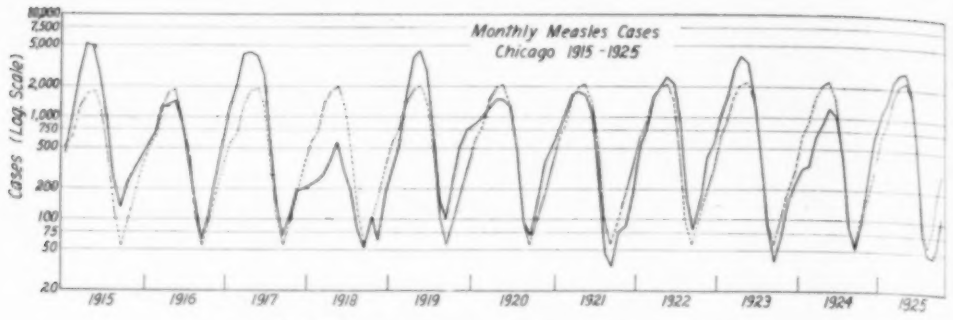

CHART II. CHRONOLOGY OF MONTHLY MEASLES CASES

Note the striking annual swing, the tendency to excess in alternative years, and the general orderly sequence. As the chart is necessarily on a logarithmic scale, the peaks should be imagined as sharper and higher than they appear in the chart.

epidemic years the rise is sharper and the curve leans to the left; in non-epidemic years, *vice versa*.

c. The oscillations are, in general, smooth and orderly. Exceptions occurred during influenza years. The only violent break in the curve is found in November, 1918, the month after the influenza pandemic. Minor distortions in the curve also occur at the time of the respiratory increases early in 1918 and 1920. Whether or not these interesting associations are significant is a question for further research.

The invariable and orderly recurrence of the annual measles swing, and the familiar occurrence of annual waves for many other diseases can only mean to the thoughtful observer that there must be at work one or more forces associated with the round of seasons, which produce the annual ebb and flow in disease. We naturally think of such possible factors as the annual cycle of sunlight, ultra-violet rays, temperature, humidity, etc., and of their effect upon the susceptibility of the population, upon bacterial changes, and upon opportunities for transmission of infection.

The identity and mechanism of the forces producing the annual disease cycle still lie in the realm of speculation, but their existence and continuity will scarcely be doubted.

3. *An epidemic cycle* can be traced upon Chart II, but is more obvious upon Chart I, where the seasonal swings have been ironed out.

There is clearly a tendency to a 2-year recurrence. A study of measles mortality in Chicago during the last fifty years shows that the disease moved in these 2-year cycles during more than 75 per cent of the time. Brownlee[2] concluded from periodogram analysis that measles had a wave length of 97 weeks in some sections of London, and 87 weeks in others.

The length of these epidemic waves is clearly not as constant as that of the annual wave; nevertheless, statistical and general observation leads to an inference of essentially continuous, systematic motion.

We must also recognize unsystematic deviations, such as those associated with the influenza periods, but the curve shows that they merely modify and do not dominate the picture.

The foregoing analysis of the measles complex suggests that it is perhaps logical to think of most epidemics as the upper portions of a continuous wave movement rather than as isolated explosions, although the latter type will, of course, occur from time to time, especially in small or isolated communities.

Striking evidence of the fundamental sequence of events is afforded by the fact that it is possible to forecast the incidence of measles and other diseases with a considerable degree of success. For example,

during the 15 years, 1911–1925, measles cases in Chicago showed the enormous range from 20 cases to 5,169 per month, a ratio of 1:258. Nevertheless, one could have predicted that the October incidence would be between 0.8 and 2.5 times the September incidence and the prediction would have been correct throughout the 15-year period. For individual years, the forecast could have been much more precise.

This could not be said if the component movements in measles were predominantly erratic and unsystematic.

THE MEANING OF "NORMAL" INCIDENCE

If we accept the foregoing qualitative analysis of time movements of epidemic diseases, the delightful simplicity of our original conception of "normal" incidence, or the "expectancy," vanishes. The backbone of these standards has always been a type of monthly or weekly average; in other words, a seasonal swing, whereas it would seem more rational to expect the resultant of the three continuous tendencies—secular, seasonal and epidemic.

But although we may quarrel with the names and possibly the theoretical bases of normals and expectancies, the fact remains that they are extremely useful in a very practical way, and with refinements can be made even more serviceable as arbitrary constants—bench-marks against which to measure the epidemic swing. We, therefore, turn to a consideration of the best type of average to employ for calculating these bench-marks.

We shall employ the generic term "norm" to designate the weekly, monthly or annual bench-marks because it is convenient, suggestive, and in current use, but chiefly because no better term suggests itself. The understanding is that it does not necessarily imply normalcy.

Averaging is frequently a process working backward, *i.e.*, of estimating the center from which the items of the series have been deviated by one force or another. Let us first reverse the process and try to get a picture of how, for example, a series of case totals for Januarys may have been produced.

JANUARY ON THE COASTER

If measles had no epidemic swing, secular trend or random irregularities, but only an unvarying seasonal swing, then all Januarys would show the same case totals. Now admit to the picture the epidemic wave showing 7 or 8 cycles in 15 years. During that period, January may conceivably be caught—and usually is—in 15 different phases of the epidemic wave. If we arrange the resulting 15 January case totals in a column according to magnitude, the larger or top items of the resulting array will represent crests and the smaller numbers the troughs of the epidemic wave.

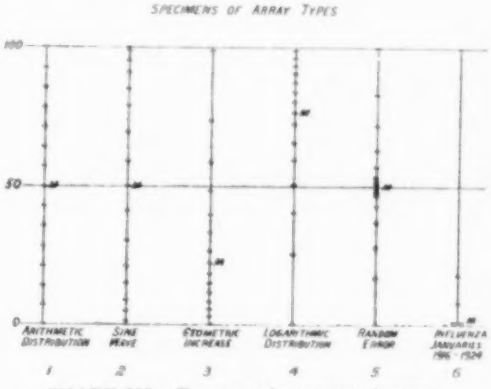

CHART III. TYPES OF ARTIFICIAL ARRAYS

The first five arrays are ideal; that is, they follow certain mathematical laws precisely. Note that a pure arithmetic distribution shows no clustering or "bunching" of points. The sine wave produces clusters at both extremes, the geometric distribution at the bottom, the log. distribution at the top, and the random error distribution at the middle. "M" locates the middle terms of the series.

Obviously, not all forms of waves would produce the same type of array. Thus, an array like No. 1 (arithmetic) in Chart III might come from a zigzag of straight lines. Array No. 2 might come from the ordinary harmonic (sine) wave; No. 3 (geometric) might come from a flat-bottomed, sharp-topped wave; No. 4 (logarithmic) from a flat-topped wave; No. 5 from a wave sharp at both top and bottom, with wide, gently sloping middle.

(It could also be derived without wave motion from a random scatter following the normal error law.) No. 6 (influenza) might be considered as an exaggeration of the geometric form.

Arrays 1–5 may be called ideal or pure arrays because they follow certain mathematical laws precisely. For any of these, the median (middle point as to *order* of magnitude) would be the functional center, above or below which the epidemic wave operated half of the time. If, therefore, measles cycles followed mathematical laws with precision, we should simply pick the median item as our bench-mark, regardless of the shape of the epidemic wave. But, unfortunately, the measles curve, like animate nature in general, does not walk a chalk line. The waves wiggle, stutter, or even halt occasionally, so that sometimes we have a January incidence where February has a right to be, or an epidemic peak where we might have expected a halfway house. As a result, the spot in our array where the functional center item ought to be may be a gaping void, whereas some distance off may be a guilty looking little cluster of points, clearly away from their expected stations.

As a rule, therefore, in case series, some other process of averaging is necessary to find the approximate spot where the median ought to be. Our success in that process depends largely upon our skill in selecting the proper averaging method.

As a general rule, when the arrayed items are approximately symmetrical about the center, the arithmetic average is the best key to the true median or functional center of the series. This would apply to arrays 1, 2 and 5 on Chart III. For unsymmetrical arrays, such as 3, 4 and 6, we can usually find a process of throwing the items into symmetry and then average to find the functional center. Thus, if we take the logarithms of the items in No. 3, the array becomes arithmetic, like No. 1. We can then average the logarithms and from a table find the antilogarithms, *i.e.*, the geometric mean, which is our best practical approximation of the true median, or functional center, for that type of series.

THE CENTERING PROCESS FOR MEASLES

We now return to our problem of working backward from the measles cases to the functional center or true median of the epidemic wave.

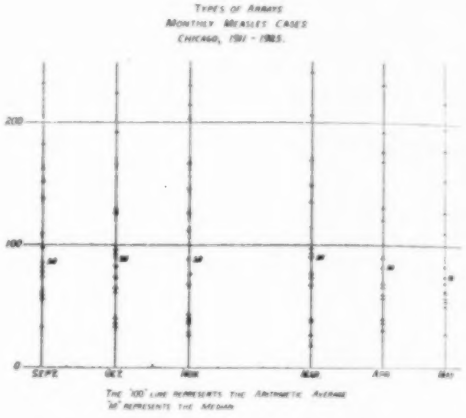

CHART IV. TYPICAL MEASLES ARRAYS ON A PERCENTAGE SCALE

They crudely resemble the geometric array of Chart III, with modes at the bottom. On a log. scale they become approximately symmetrical. The geometric mean therefore seems an appropriate centering value.

Chart IV shows graphically the arrays from 6 separate months of data. They have been reduced to a percentage scale for better comparison of the high months with the low.

The arrays are clearly unsymmetrical, bunching below and scattering at the top. The central line, representing the arithmetic average, passes through gaps in most of the series, showing that the arithmetic average is a mathematical abstraction for these series rather than representing any usual or frequent case incidence.

The series show a clear resemblance to the geometric type of array of Chart III. When plotted on a log. scale all of the arrays become more symmetrical. The geometric mean, therefore, appears to be the best approximation to the true median.

A simpler approximation to the true median is sometimes made by taking the

arithmetic average of the 3 middle items of the array. When the items cluster well in the median zone, this practice may give a fairly satisfactory result. It is, however, subject to error, and should not be blindly employed without examining the array. Seven or 9 years of data are usually taken for this purpose.[3]

TABLE I

AVERAGES OF VARIOUS TYPES
Measles Cases, 1911–25, Chicago, Ill.

Month	Arithmetic Mean	Geometric Mean	Adjusted* Median
January	697	553	518
February	951	726	808
March	1,740	1,354	1,474
April	2,244	1,762	1,748
May	2,375	1,923	1,652
June	1,448	1,236	1,171
July	494	445	428
August	118	106	93
September	61	55	54
October	116	99	102
November	220	174	189
December	390	314	282

* Mean of three middle items of array.

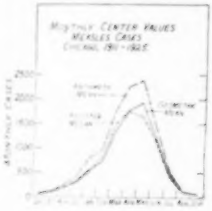

CHART V

THREE TYPES OF AVERAGE

The "Adjusted Median" is a short-cut approximation to the geometric mean. The arithmetic mean is too high, being inflated by items from epidemic years.

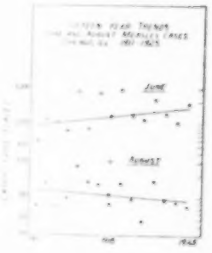

CHART VI

TWO DIVERGENT MONTHLY TRENDS

August measles cases in Chicago trend downward, whereas June cases trend upward. The lines center at the geometric mean, being fitted on a log. scale. (Absolute cases were used, not rates.) Simple monthly averages may therefore be misleading when used as norms.

Table I shows the arithmetic mean, the adjusted median (mean of 3 middle items), and the geometric mean for each month* of the year. The latter information is shown graphically on Chart V. It indicates that the adjusted median and the geometic mean are not very different but that the arithmetic mean is invariably too high.

* As the basic monthly data may be found in annual reports of the Health Department of Chicago, they will not be reprinted here.

LONG TIME CHANGES

In Chart I we saw that the case totals showed practically a horizontal trend. From annual data alone, therefore, one might infer that the same monthly norm would serve equally well for 1912 as for 1924. But Chart VI clearly shows that, for example, the August cases definitely trend downward while June cases trend upward.† (In this study trend lines are fitted to the logs of cases; the central ordinate [1918] is, therefore, the geometric mean.)

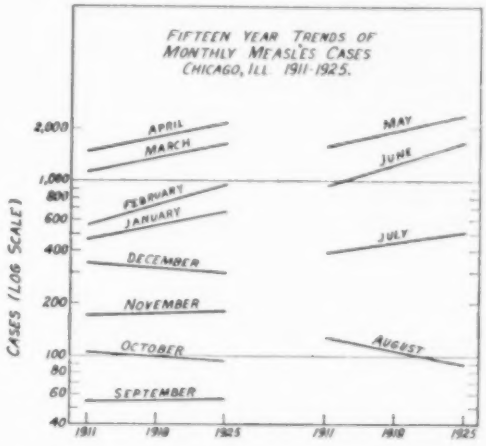

CHART VII. TREND LINES FOR ALL MONTHS

The low measles months are practically horizontal or are trending lower, but the high months are trending higher; that is, the *proportionate* seasonal rise is becoming greater. (Note from Chart X, however, that the epidemic swing seems to be shrinking in proportionate amplitude.)

Chart VII shows the trend line for each month of the year. It is interesting to discover that, with one exception, the low measles months (August to December) are either trending lower, or at best are showing a scarcely perceptible upward trend. The rest of the months, however, including all of the high ones, are trending higher.** In brief the seasonal wave has become steeper.

† For the suggestion to take monthly trends the writer is indebted to Dr. Reed, who used this method in certain studies which are as yet unpublished. The method was also used by E. C. Snow[4] and by Crum[5] for economic series.

** Bear in mind that the monthly trends have been fitted to cases, not rates. Rates would pull down all of the slopes but would show the same disparity between the two monthly groups cited above.

It follows from the foregoing that in this series the geometric mean for, say, May would be too low as a norm for 1911, and too high for 1925. A better norm for May, 1925, than the geometric mean, would, therefore, be the 1925 intercept on the trend line for May.

It is evident that this method corrects for both secular trend and for changes in the form of the seasonal wave.

THE WIDENING SEASONAL SWING

Chart VIII and Table II show the curves of monthly trend values for 1911 and 1925. In 1911 the trend value for the peak month (May) was about 30 times the trend for the lowest month (September). In 1925, however, the peak month was about 41 times the low.

TABLE II

1911 AND 1925 INTERCEPTS OF TREND LINES FITTED ON LOG. SCALE TO MONTHLY MEASLES CASE SERIES

Month	1911 Trend	1925 Trend
January	461	663
February	561	956
March	1,132	1,614
April	1,474	2,110
May	1,570	2,356
June	944	1,618
July	391	507
August	124	89
September	54	57
October	105	93
November	171	177
December	343	296

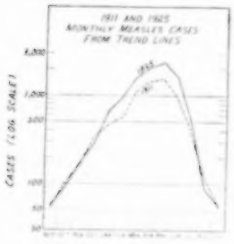

CHART VIII

MEASLES NORMS FOR 1911 AND 1925

Showing again that the seasonal wave, on a ratio scale, has been becoming taller.

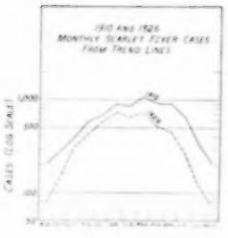

CHART IX

THE SCARLET FEVER SEASONAL

Here again the shape of the curve is changing. The proportionate seasonal rise has increased, although the absolute level of cases has declined.

Chart IX shows that an even more striking change has been taking place in the seasonal wave of scarlet fever cases in Chicago. In 1910, the trend value of the peak month was about five times the low month; in 1926 the ratio had increased to 10:1. The amplitude of the seasonal wave had, therefore, doubled.

Does the widening amplitude imply a corresponding relative seasonal change in host susceptibility, in opportunities for contact infection, or in bacterial activity? Or are we merely finding a larger proportion of the winter cases than formerly, due to more intensive school medical inspection?

The riddle merits careful study.

THE THEORY OF FORECASTING

This subject can merely be touched in the present paper.

In Chart X, the monthly trend values (norms) are plotted in a continuous curve (dotted line) against the curve of actual cases. The chart indicates that the method for early detection of epidemic trends, which was applied in an earlier paper to scarlet fever, is equally applicable to measles.

When the curve of actual cases persistently rises more rapidly than the norm, or falls more slowly, then the inference is that the epidemic wave is rising. A number of such instances are visible on Chart X, *e.g.*, early in 1915, 1917, and 1919. The movement can be traced more easily if monthly or weekly ratios are taken of the reported cases to the corresponding norms. This ratio was termed in the earlier paper, the "epidemic index."

Epidemic forecasting, like weather forecasting, consists as yet of stating probabilities, not certainties. There are still too many unmeasured variables to permit certain predictions. It is hoped that further research may lead to the evaluation of some of the more important of these unsystematic variables, thus permitting a smoother moving picture of the unfolding epidemic wave. Even in its present crude state, however, the indicated technic has been of practical value, leading to correct anticipations oftener than to incorrect.

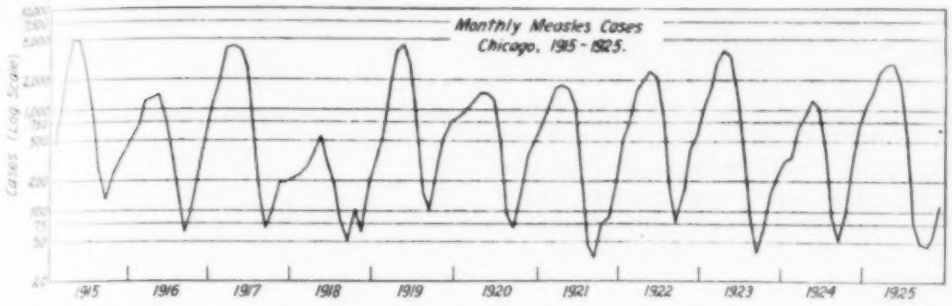

CHART X. MEASLES CASES IN RELATION TO THE NORM
The solid line represents actual cases and the dotted line the progressively changing norm. An increasing epidemic tendency is indicated when the curve of actual cases persistently rises faster than the norm, or declines more slowly than the norm. As the chart is on a log. scale, this is equivalent to saying that a persistent increase in the successive ratios of the monthly cases to their respective norms, suggests a rising tendency in the epidemic wave.

It is to be emphasized that forecasting is at its best in very large population units where the wave movements are gradual and continuous. In small communities the incidence is likely to be sporadic and explosive.

TWO AGGREGATE FORECASTS

Table III summarizes two forecasts for the major quarantinable diseases for advance periods of 4 months. Forecasts were first made for each of the individual diseases, and these were then combined to form the aggregate.

TABLE III

TWO FOUR MONTHS' FORECASTS OF SIX MAJOR QUARANTINABLE DISEASES *

A. Forecast Made June 8, 1925

	June	July	Aug.	Sept.	Total
Forecast	4,700	2,900	2,100	2,000	11,700
Cases reported	5,314	2,834	2,110	1,908	12,166
Error	—11.3%	+1.0%	—0.5%	+4.8%	—3.8%

B. Forecast Made December 4, 1926

	Dec.	Jan.	Feb.	March	Total
Forecast	2,650	3,350	3,350	4,200	13,550
Cases reported	2,430	2,956	3,465	4,931	13,782
Error	+8.3%	+11.8%	—3.5%	—17.5%	—1.7%

* The diseases included were scarlet fever, measles, diphtheria, whooping cough, chickenpox and pneumonia.

For the first period, the total case forecast was 11,700; the actual number reported was 12,186. The forecast was, therefore, 3.6 per cent too low.

For the second period the aggregate forecast was correct within 1.7 per cent. For individual months the forecasts had errors ranging from 0.5 per cent to 17.5 per cent.

Various uses suggest themselves for group forecasts of this kind. For example, they afford a basis for estimating how many quarantine officers could safely be shifted from quarantine work to food or sanitary inspection in the summer.

SUMMARY AND CONCLUSIONS

1. In the curve of monthly measles cases in Chicago the following types of systematic movement are apparent:

   a. A gradual decline in case rates, and a horizontal trend for the absolute number of cases

   b. A very pronounced seasonal cycle of almost invariable length of 12 months

   c. An epidemic cycle whose wave length is usually about 2 years, but is more variable than the seasonal cycle

2. The inference is that the telluric and biological forces producing these changes operate in essentially continuous and systematic fashion.

3. Unsystematic deviations also occur, but these merely modify the curve and do not dominate it.

4. If the foregoing inferences are accepted we cannot with consistency consider a form of weekly or monthly average as the "normal" incidence, but merely as an arbitrary—although a very useful—bench-mark for purposes of comparison.

5. For measles and scarlet fever cases, geometric averaging appears to be the

most appropriate type of centering process for weekly or monthly data.

6. An adjusted median, such as the average of the three or five middle items of the arrayed series may, under favorable conditions, provide a short cut approximation to the proper centering value. The "favorable conditions" should not be taken for granted, however, without careful inspection.

7. With the passage of time, the amplitude, or vertical rise of the seasonal swing has widened in Chicago for some diseases. In scarlet fever, the amplitude has doubled in 15 years. In measles it has increased about 37 per cent.

8. A method is shown for correcting monthly averages for this change.

9. A basis of forecasting is briefly reviewed.

10. Two 4-month forecasts are summarized and their accuracy indicated.

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SUCCESSFUL CONFERENCE ON INDUSTRIAL NURSING

The problems and possibilities of industrial hygiene from a practical as well as from a technical point of view were ably discussed at a Conference of Industrial Nursing called by the State Department of Labor and Industry of Pennsylvania at the State Capitol, Harrisburg, June 14, 1927. There was an attendance of over 300. The State Department of Health coöperated with the Department of Labor and Industry in holding the Conference. The program was prepared by the Bureau of Women and Children, of which Charlotte E. Carr is Director.

At the morning session Industrial Nursing and Safety were discussed by .Dr. Loyal A. Shoudy, Chief Surgeon of the Bethlehem Steel Corporation, who presented the point of view of the medical director. The point of view of the industrial nurse was presented by Emily Raub, R.N., that of the employer by Joseph H. Jones, that of the safety director by Harry A. Reninger, and of the factory director by Cyril Ainsworth. The discussion was led by E. H. McIlvain, M.D.

Alice M. O'Halloran, R.N., was Chairman at a luncheon meeting of industrial nurses at which the training of the industrial nurse in relation to her employer, her coworkers in the establishment, the physical equipment of the plant, the mother in the home and her fellow nurses in the community were the general points made.

The afternoon session was devoted to the subject of health at which Wade Wright, M.D., Assistant Medical Director, Metropolitan Life Insurance Company, discussed industrial nursing and health from the point of view of the industrial physician. Julia A. Weder, R.N., discussed the same subject from the standpoint of the plant nurse; John Troxell from the standpoint of the worker, and Elizabeth B. Bricker, M.D., from that of hygiene and sanitation. The open discussion following was led by W. J. McConnell, M.D.

Dr. L. R. Thompson, Chief of the Division of Industrial Hygiene and Sanitation of the United States Public Health Service, brought to the conference the result of his years of study of sickness records in industrial establishments and offered his plan of standardizing medical records as a means of establishing a basis for preventive medical work in industry.

ROLE OF THE PUBLIC HEALTH NURSE IN COMMUNITY MENTAL HYGIENE *

FRANKWOOD E. WILLIAMS, M.D.

Medical Director, The National Committee for Mental Hygiene, New York City

IT IS becoming a little easier, I think, to see what the personnel of the mental hygiene movement will probably be. In the past it has not been easy to see sometimes because we have been in a developmental stage, but it looks now as though the mental hygiene movement, in its personnel aspects, would follow very much the same lines, with some modification, as the field of general public health.

The general public health movement is professionally led by specially trained medical men, or even more specially trained non-medical men, such as the doctors of public health, with the nurse as the public health officer's chief assistant in the community. He may receive some assistance from the social worker and if he is to succeed in his work, he must eventually have the coöperation of parents, and teachers, and finally of even the school children themselves.

I believe that, in the way of personnel, mental hygiene work will follow much this plan. Mental hygiene work must be professionally directed by specially trained medical men, known as "psychiatrists," or by specially trained non-medical persons, known as "psychologists," or possibly eventually by a third type of person not now available who will be a still more precisely trained person, combining the elements of both psychiatry and psychology in his training, but who, at the end of the training, will be neither a psychiatrist nor a psychologist. That type of person does not exist at the present time, and there will be a good many difficulties to overcome before he is evolved.

The psychiatrist has as his chief assistant in the community, a new type of worker who has been created to meet a very particular need, the psychiatric social worker. She has more than met the expectations that were held for her, and unquestionably is a professional fixture. Her training has been a matter of study and experimentation for the past eight years, and we now know pretty well what that training should be.

The technical problems in mental hygiene, that is, the actual handling of cases—diagnosis, treatment, and the like—will probably rest in the hands of these three professional groups: the psychiatrist, the psychologist, and the psychiatric social worker. But just as it would be impossible to progress in public health if the only people engaged in public health activities were the public health officer himself, his nurse, technical assistants and laboratory people, we should not progress very far in mental hygiene with just the three groups mentioned. There will never be enough psychiatrists, psychologists, or psychiatric social workers, to enable us to manage the multitude of problems that exist in any community, and we shall never make progress if these groups alone are entirely responsible for such work as is done. In addition to these rather technical people, there are required, as in general health

* Presented at the Special Session on Mental Hygiene of the American Public Health Association at the Fifty-fifth Annual Meeting at Buffalo, N. Y., October 11, 1926.

work, the coöperation of the nurse, the teacher, the parent, and the general physician.

Others might be mentioned, but these are probably the more important groups. As in the instance of public health there might be included eventually the child himself in the school, but one needs to go carefully here, because though much can be done with the individual child in the hands of the proper person, we are a long way from the time when much advice can be given to school children along mental hygiene lines, such as we are now giving to children along physical health lines. The time will come, possibly; I hope so.

The homes are the places where many of these problems arise. The homes and the schools are the infectious spots from which the nervous and mental diseases, and maladaptations are produced—and I include in this not only the actual crystallized forms of maladaptation, but the still more important, socially, character twists and the personality twists, that make the difficult people in the community. These are just as dangerous as the polluted water supplies with which the public health man is dealing.

It will be in the home and in the school that the mental hygienist will eventually either win his victories, or meet his final defeat. When we talk of the world of the home, or rather, the world of education, and the world of parenthood, we are, of course, almost encompassing the world itself; so it is a pretty big problem, and it is perhaps best not to expect too much too soon.

Parents are of all grades of intelligence, and parents have made all grades of compromises with life. Naturally, they are not going to be an easy group with which to deal, when it comes to mental hygiene. It may be possible to teach them to feed their children spinach; or even that their children should sleep and eat regularly, and have fresh air. These are matters they can easily come to understand. In the field of mental hygiene, it is difficult for parents to conceive that they themselves are responsible for the nervous condition and bad behavior of their children. They are so aware of their own conscientiousness and good intentions that it is difficult for them to accept this responsibility.

The most conscientious persons may be doing the very greatest of damage, and the fact that they are conscientious or well-intentioned has nothing to do with it, nor does it mitigate the situation.

With notions of conduct deeply ingrained, as they are, not only in the minds, but in the whole emotional make-up of parents, we are up against a very difficult situation when we try to show them otherwise. It is very difficult for parents to understand that a "good" boy is sometimes a very unhealthy boy, and that being a good boy does not necessarily mean a healthy boy but may mean just the opposite. It is just as hard for them, or for the neighbors, to believe that a so-called bad boy may be a very healthy boy, of very sound nervous and mental health.

Such a conception requires too great a change in point of view, and of philosophy; it is too great a reversal to be easily accepted; it makes a topsy-turvy world, where good ceases to be synonymous with healthy, and bad with unhealthy, and where the blame for a bad child is placed upon conscientious parents. It is so completely out of harmony with the parents' philosophy of life and the emotional props which they have brought into their own lives to support themselves—that is, the various social amenities, the religious, the moral, and the ethical codes, none of which they have really thought through or investigated, but which, after shaking the bottle well, they have applied as prescribed by someone else, to the sore spots which they have themselves received as a result of their contact and conflict with life.

It will be a generation, or more, before we can expect a very great deal of assistance from parents in these matters; not

until there has come, through the schools —different kinds of schools—and through the colleges, a group of individuals who have been differently trained, who are themselves freer of emotional defects and who have some understanding of these matters. Not until then can we hope for much from parents.

In the meantime, unless the whole matter is to go by default, we must apply ourselves to what can actually be done in the situation, difficult as it is, and far from ideal as it is. Two things occur to us as possible: one, where parents are teachable, they can be taught; and the other, to be on watch at various points for children who are breaking—not wait until they develop a definite neurosis or psychosis but watch for the very early signs of emotional maladjustment and, as we find these children, bring them the assistance which they need in order properly to reorganize and make safe their lives.

THE NURSE'S OPPORTUNITY

These two things we can do and get results, while this new parenthood is being trained, and here is where the nurse comes in. The public health nurse has an unparalleled opportunity, both for discovering individuals who need assistance, and for teaching those who are teachable; there is probably no professional group in the community that has quite the opportunities of the public health nurse to accomplish these two most important things in the projects that we must undertake in the field of mental hygiene.

For the nurse who desires to become a technical assistant to the psychiatrist, there must be the training that is now required for the psychiatric social worker. For this particular purpose there is no other training that can be substituted. Any nurse who wishes to become a technical assistant to a psychiatrist in this work, must be trained precisely as is the psychiatric social worker, or take that part of the training which has not been previously included in her training as a nurse.

The great majority of nurses will not desire to do this, but will prefer to remain in their own professional lines of work; but if the nurse, as a nurse, is to undertake the two projects mentioned above, then, another step is necessary. If she is to instruct others along these lines, then she herself must be instructed. For her to carry into the home, under the guise of mental hygiene, merely the platitudes that she has picked up in her experience in solving her own problems, or a philosophy of life which is purely personal and which is not necessarily either healthy or wise, is not mental hygiene, even if it is done with the greatest conscientiousness and good intentions. If the nurse is to instruct, she herself must be instructed, and she must learn how to identify those who are in need of assistance.

TRAINING OF THE NURSE

How and where can she be instructed? There are two bodies that must be considered: one is that group of nurses already graduated and at work in the field, and the other is that group who are now in the process of their training. As to the latter, the situation would seem to be quite clear and to offer no particular difficulties. Their needs are met when adequate courses are placed in the curriculum.

The situation, so far as it concerns mental hygiene and the nurse, will not be met until adequate courses are in the curriculæ. And these courses will not be limited to lectures in academic psychology, nor to tracing nerve tracts up and down the spinal column nor to memorizing signs and symptoms of mental diseases. These are totally inadequate to the needs of the public health nurse who will have to deal much more frequently with temper tantrums and eating idiosyncrasies than with dementia praecox or general paresis. Obviously, the work in the schools of nursing cannot be all the work that is required in the training of the psychiatric social worker; that would be unnecessary, but it must be somewhere

work, the coöperation of the nurse, the teacher, the parent, and the general physician.

Others might be mentioned, but these are probably the more important groups. As in the instance of public health there might be included eventually the child himself in the school, but one needs to go carefully here, because though much can be done with the individual child in the hands of the proper person, we are a long way from the time when much advice can be given to school children along mental hygiene lines, such as we are now giving to children along physical health lines. The time will come, possibly; I hope so.

The homes are the places where many of these problems arise. The homes and the schools are the infectious spots from which the nervous and mental diseases, and maladaptations are produced—and I include in this not only the actual crystallized forms of maladaptation, but the still more important, socially, character twists and the personality twists, that make the difficult people in the community. These are just as dangerous as the polluted water supplies with which the public health man is dealing.

It will be in the home and in the school that the mental hygienist will eventually either win his victories, or meet his final defeat. When we talk of the world of the home, or rather, the world of education, and the world of parenthood, we are, of course, almost encompassing the world itself; so it is a pretty big problem, and it is perhaps best not to expect too much too soon.

Parents are of all grades of intelligence, and parents have made all grades of compromises with life. Naturally, they are not going to be an easy group with which to deal, when it comes to mental hygiene. It may be possible to teach them to feed their children spinach; or even that their children should sleep and eat regularly, and have fresh air. These are matters they can easily come to understand. In the field of mental hygiene, it is difficult for parents to conceive that they themselves are responsible for the nervous condition and bad behavior of their children. They are so aware of their own conscientiousness and good intentions that it is difficult for them to accept this responsibility.

The most conscientious persons may be doing the very greatest of damage, and the fact that they are conscientious or well-intentioned has nothing to do with it, nor does it mitigate the situation.

With notions of conduct deeply ingrained, as they are, not only in the minds, but in the whole emotional make-up of parents, we are up against a very difficult situation when we try to show them otherwise. It is very difficult for parents to understand that a "good" boy is sometimes a very unhealthy boy, and that being a good boy does not necessarily mean a healthy boy but may mean just the opposite. It is just as hard for them, or for the neighbors, to believe that a so-called bad boy may be a very healthy boy, of very sound nervous and mental health.

Such a conception requires too great a change in point of view, and of philosophy; it is too great a reversal to be easily accepted; it makes a topsy-turvy world, where good ceases to be synonymous with healthy, and bad with unhealthy, and where the blame for a bad child is placed upon conscientious parents. It is so completely out of harmony with the parents' philosophy of life and the emotional props which they have brought into their own lives to support themselves—that is, the various social amenities, the religious, the moral, and the ethical codes, none of which they have really thought through or investigated, but which, after shaking the bottle well, they have applied as prescribed by someone else, to the sore spots which they have themselves received as a result of their contact and conflict with life.

It will be a generation, or more, before we can expect a very great deal of assistance from parents in these matters; not

until there has come, through the schools —different kinds of schools—and through the colleges, a group of individuals who have been differently trained, who are themselves freer of emotional defects and who have some understanding of these matters. Not until then can we hope for much from parents.

In the meantime, unless the whole matter is to go by default, we must apply ourselves to what can actually be done in the situation, difficult as it is, and far from ideal as it is. Two things occur to us as possible: one, where parents are teachable, they can be taught; and the other, to be on watch at various points for children who are breaking—not wait until they develop a definite neurosis or psychosis but watch for the very early signs of emotional maladjustment and, as we find these children, bring them the assistance which they need in order properly to reorganize and make safe their lives.

THE NURSE'S OPPORTUNITY

These two things we can do and get results, while this new parenthood is being trained, and here is where the nurse comes in. The public health nurse has an unparalleled opportunity, both for discovering individuals who need assistance, and for teaching those who are teachable; there is probably no professional group in the community that has quite the opportunities of the public health nurse to accomplish these two most important things in the projects that we must undertake in the field of mental hygiene.

For the nurse who desires to become a technical assistant to the psychiatrist, there must be the training that is now required for the psychiatric social worker. For this particular purpose there is no other training that can be substituted. Any nurse who wishes to become a technical assistant to a psychiatrist in this work, must be trained precisely as is the psychiatric social worker, or take that part of the training which has not been previously included in her training as a nurse.

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between that which would be a maximum, and the present minimum.

The courses that would probably be necessary or adequate would be essentially such as those that have been worked out for the preliminary courses at the Smith College School for Social Work, the New York School of Social Work, and the Pennsylvania School of Social and Health Work. The courses at Philadelphia are designed for graduate nurses who wish to familiarize themselves with this material. All of these courses have been carefully worked out, particularly those at Smith and at New York. I think they offer an abundance of suggestion for those in the nursing schools who wish to develop something that will be adequate, but which, at the same time, will not be so elaborate as that required of the psychiatric social worker.

In the field, we have a very difficult situation, and yet, some suggestions have been coming along—worked out, in most instances, by the nurses—that are going to be very helpful. Here is a great body of able women at work in the field and eager to meet the responsibilities they feel. It has been difficult to know how to advise the nurse, to point out means by which she could make herself competent in the mental hygiene field. Reading, obviously, is not enough, although something is accomplished thereby. Attending courses of semi-popular lectures is not enough, although something is gained thereby, also.

VALUE OF DEMONSTRATION

From the results of experiments that are being tried at the present time, and from my experience in watching and having some part in the development of training for social workers, I believe that, aside from reading and lectures, the nurses—the large nursing organizations in the field—will get their best instruction through demonstration. I refer here to the work that is being done in one of the great nursing associations in Boston, which, as some of you know, has employed Miss Donohoe, a skilled psychiatric social worker, who has come into the nursing organization, not as a nurse but as a social worker, to see what problems are to be met in the work of that organization; to work out a method for handling these problems in conjunction with other organizations and facilities in Boston; and to instruct the nurses themselves in the recognition and management of these problems. This, it seems to me, is most important. It is one thing to attend a lecture upon a certain mental hygiene subject, and come away with a vague sort of notion about certain things; it is another thing to have a case in your own field with which you yourself have been working, and then have somebody come in and work upon that case with you. You will learn more through working out that one case with somebody who is informed and trained, than by going to many lectures of a general nature upon the same subject.

An experiment has also been tried in Chicago among a great body of social workers, who are in much the same position to-day as is the great body of nurses; they are not trained in this particular field, and yet they are dealing daily with these problems, and have to meet them as best they can. Obviously, all these workers cannot be brought into formal courses for instruction.

In Chicago, this large social working organization employed a psychiatric social worker, Miss Myrick, who supervised and directed the work of this kind in the organization, and worked with the individual social workers upon their problems. The results, I understand, have been excellent.

There is still another precedent; that is, the work of the nutrition workers with groups of nurses such as in the Community Health Association of Boston, the Visiting Nurse Association of New Haven, and the East Harlem Nursing and Health Demonstration in New York City. This has been an experiment, I understand, to find out whether or not it

would be possible for a worker, not a nurse, but with special knowledge or skill in an allied field, to come into a nursing organization, and carry on within that organization, with the assistance of the nurses. In this instance, it happens to be nutrition workers who have been set to work with a group of nurses, coöperating with them, and, no doubt, instructing them to a certain extent in regard to certain special problems that are not covered in the nurses' training. It is reported that these experiments are working out very well.*

It seems to me that these experiments offer very valuable suggestions to us in the mental hygiene field, as to how it may be possible to assist the public health nurse, now graduated and at work, to a greater usefulness in this field, by bringing to her or to her organization, workers who are specialists in this particular work, and who may assist her to a better understanding of the mental hygiene problems met daily in her work. In doing this it is possible to give her probably the most effective type of instruction.

The same problem exists in exactly the same way with school teachers; even more critically, because they have such constant contact with the students. When eventually the school teacher, and the nurse, and, after a time, the parent, become adequate in this field, there are many problems which will be handled by them. I think we all look forward to the time when a great many of the problems now brought to the mental hygiene clinic, or to the psychiatrist, or to the psychiatric social worker, which are of importance, but which are still simple at this particular stage, can be handled by the nurse, the general physician, the school teacher, the school physician, and even by the parent. There will come, then, to the psychiatrist and his specialized assistants the more difficult cases, which are quite beyond what should be expected of those not specially trained.

There is an important field in mental hygiene for the public health nurse. We are all anxious to see her equip herself to take up this work; we are glad that she herself is becoming interested. It seems to me that her work consists, not in being a psychiatrist, nor psychologist, nor psychiatric social worker, but in being a really good nurse; sufficiently trained to serve as an advance guard in the recognition of unhealthy emotional habits and reaction patterns, especially in children, and of nervous and mental disease and defect and in the instruction of parents as to the healthy emotional development of their children. She has unlimited opportunities.

* Since this paper was read, the Visiting Nurse Service of the Henry Street Settlement, New York City, and The National Committee for Mental Hygiene have entered upon a similar coöperative study. Miss Glee L. Hastings, an experienced psychiatric social worker, has been employed by the National Committee and assigned to the Visiting Nurse Service to study methods by which the work of the psychiatric worker can be integrated with the work of a nursing organization.

ERADICATION OF SALT MARSH MOSQUITOES

EDWARD STUART

Sanitary Engineer, in Charge of Malaria Control, State Board of Health, Berkeley, California

AND

N. M. STOVER

Superintendent, Three Cities and Marin County Mosquito Abatement Districts, California

SAN FRANCISCO BAY is a large area almost entirely surrounded by salt marshes of which approximately 120 miles of water frontage is under mosquito control. This work has been carried on for some years and is divided into five working districts, and one in the course of organization. The districts are as follows:

Contra Costa Mosquito Abatement District (control work to commence in 1927)
Napa County Mosquito Abatement District (organized 1926, 90 square miles)
Marin County Mosquito Abatement District (organized 1916, 125 square miles)
Three Cities Mosquito Abatement District (organized 1915, 80 square miles)
Pulgas Mosquito Abatement District (organized 1915, 84 square miles)
Matadero Mosquito Abatement District (organized 1915, 64 square miles)

There is, then, under control the large area of 443 square miles, which consists of broken hill land and marshes.

The above districts operate under the Mosquito Abatement Act passed by the California Legislature in May, 1915. Previous to this, control work had been carried on in Marin County and San Mateo County over a period of years, dating back to 1905, when it was inaugurated under Professor H. J. Quayle of the University of California.

These earlier control efforts demonstrated the need of an adequate measure for the financing of abatement work. Comprehensive control work in San Mateo, Burlingame and Hillsborough, financed by the three cities themselves, led to the actual drafting of the Mosquito Abatement Act in 1915.

To organize a district it requires a petition to the Board of County Supervisors signed by 10 per cent of the registered voters of the district, which may be any size up to a whole county. All municipalities coming within the limits of the district must have the proposed district accepted by their councils, after which the petition goes to the Board of County Supervisors who hold a hearing when the petition is considered and all persons interested may appear and be heard. If the Board of Supervisors decides to create the district, the board appoints a board of trustees to serve without pay. This board of trustees has complete charge of the abatement work and is usually carried out by their appointing a full-time superintendent who hires whatever help he may require to do the work. The county is then empowered to levy taxes for this abatement work, not to exceed $.10 on $100 assessed valuation.

In the bay region of San Francisco, the tax averages $.08 on the $100, and this has been found to be adequate to finance all the work required. This has been found to be true in all the mosquito abatement districts in California with the exception of a few sparsely inhabited

small districts where the tax limit is insufficient.

The above districts are spending around $50,000 annually for control work, divided as follows:

Napa	$12,000
Marin	13,000
Three Cities	9,500
Pulgas	10,000
Matadero	8,000
Total	$52,500

A large portion of this money is being spent on permanent improvements such as levees, drainage systems, tide gates, plowing of cracked land, etc.

The above list does not include the 12 other mosquito abatement districts in California which have been organized for the purpose of malaria control. These malaria districts have been operating for some time and are apparently successful in reducing the malaria morbidity.

PROBLEMS ENCOUNTERED

The chief problem is the control of *Aedes dorsalis* and *Aedes squamiger*. These two species are migratory in habit and breed in salt or brackish water. This explains the necessity of the extensive control work necessary on the marsh lands of the districts in the San Francisco Bay region. These two species have a considerable range of flight and have been found 15 miles inland from any possible breeding ground.

OPEN MARSH LAND

Open marsh land or land which is open to tidal flow is the simplest problem encountered, necessitating only the opening up of basins or depressions to tidal flow by means of drainage ditches. These drainage ditches remain open a number of years, being constantly flushed out by each successive tide. These ditches are about 18 inches wide and from 1 to 2 feet in depth. The access of the tide to the sloughs and depressions prevents the water from standing long enough to permit the completion of the life cycle of the mosquito. It also permits small fish to enter which devour the larvae. Thus great tracts of land have been controlled by the construction of these ditches, work which is usually done by hand.

RECLAIMED LAND

By far the most difficult problem encountered is reclaimed land, especially reclaimed areas which, through neglect, have gradually formed natural breeding grounds. These abandoned levees and old leaky tide gates form a barrier which prevents the regular ebb and flow of the tide, resulting in accumulation of extensive areas of stagnant water, a most favorable condition for the breeding and hatching of salt marsh species.

Contrasted to the above neglected marsh areas, are the reclaimed lands where the levees are maintained in good repair and the drainage canals and automatic tide gates (or pumping plants) are kept up to the highest point of efficiency. In these areas the control work consists, in the main, of drainage by the construction of a few ditches and the application of oil on the drainage canals to prevent the emergency of the early spring broods of *Aedes dorsalis* and *Aedes squamiger*.

It is customary in all the districts to work for the coöperation of the land owners in order to accomplish the desired results. This coöperation takes many different forms of divided responsibility, such as the installation by the district of tide gates which are furnished by the land owners; plowing of cracked land by the owner or plowing partly paid for by the district and partly by the owners; the furnishing of power by the owner for pumping plants installed by the district; and in fact any equitable arrangement that is found satisfactory for the local problem involved.

In some instances, due to non-resident ownership or lack of appreciation of the value to be derived from efficient reclamation, it has been necessary for the district to assume entire control. On these areas, among which may be included the

neglected areas above mentioned, the control work is accomplished in the cheapest manner possible and consists of temporary repair of broken levees, installation of tide gates, and oiling by the district.

TIDE GATES

These gates for the control of drainage by permitting the water to flow out at low tide and automatically closing at high tide by preventing back flow, take two different forms; namely, wood and iron. The most efficient gate has been found to be a combination of corrugated iron culvert which is riveted to a cast iron flange on which is hung a cast iron gate suspended by two hinges. The first gate of this nature was built by the superintendent of the Three Cities Mosquito Abatement District in 1913. It was afterward patented by a commercial concern and is now being furnished in large quantities to drainage works of various kinds. The advantages of the above gate over the old wooden type are as follows:

1. The mud crabs will not burrow along the sides of the corrugated culvert.
2. The gate is ground to a tight joint with a flange, reducing leakage to a minimum.
3. The gate swings practically horizontal during flood water, allowing the maximum flow through the pipe.
4. The installation is economical, because these gates can be installed easily with a crew of men between tides, the installation of a gate costing around $150.
5. There is an absence of warping, found in all wooden structures exposed to alternating wetness and dryness.
6. There is no rotting out as in the case of wooden gates.

CRACKED LAND

Following the reclamation of tidal land and drainage of the same, there is a shrinkage and sinking of the enclosed surface which produces extensive cracking in the surface of the land. These cracks are from 2 to 14 inches in width and oftentimes 3 or more feet in depth. The water which accumulates in these cracks is very hard to drain out, and water stands in them offering an ideal condition for the breeding of mosquitoes. In fact, it is often the case that mosquitoes are breeding in cracks when there is no breeding in open waters. Even when pumping is resorted to the drainage from these cracks is very slow.

The oiling of such an area is an enormous job and a difficult undertaking, especially where grass grows over the cracks, when it is difficult for the oil to reach the surface of the water below.

It has been found that the most efficient way to prevent breeding in such waters is to plow the land and fill the cracks by dragging and discing. The cost of such work varies with the type of land; badly cracked land cut up by numerous sloughs will cost approximately $25 per acre, other areas costing between $12 and $15 per acre. The above work is done with heavy disc plows drawn by caterpillar tractors. The 60 H.P. seems to be the most efficient size to do this.

One concrete instance of coöperation between land owners and a mosquito abatement district is cited. The St. Vincent's Orphanage in Marin County had approximately 700 acres of such cracked land. This land had been used only for spring dry stock pasture for years and was an extensive breeder of mosquitoes. Oiling operations were costly and difficult, one season's oiling costing $1,800 on this area alone. A coöperative arrangement was agreed upon between the orphanage authorities and the trustees of the mosquito abatement district whereby the land was plowed, a levee and pumping plant repaired, at a total cost of $6,000. The 1925 crop of oat and barley hay from this land was valued at $13,000; a practical demonstration that reclamation and mosquito control go hand in hand. Oiling this area in 1925 cost $50, for oil used in the drainage canals alone.

PUMPING

As mentioned above, there is a decided shrinking and settlement of the marsh

land after reclamation and drainage have been accomplished. When the settlement is extensive it has been found necessary to resort to pumping in order to remove the last water from the bottom of the sloughs and drainage canals. The type of pump varies with the head encountered. Usually some form of low-lift pump is desirable. The Marin County Mosquito Abatement District owns and operates a vertical pump run by a 20 H.P. motor, pumping 3,800 gallons per hour, installed at a total cost of $2,000. This pump in 1926 saved the district $1,000 in oiling cost.

OILING

Oiling as a mosquito control measure should only be considered a temporary relief and a last resort to be used only in instances where permanent remedial measures are impossible. The oil used in the San Francisco Bay region is a mixture of crude oil with equal parts of "stove distillate." This makes a satisfactory oil which can be spread with knapsack pumps or power sprayers, and has sufficient body to accomplish death to the larvae before it evaporates from the surface. Crude oil costs 5 cents a gallon, and "stove oil" 8 cents a gallon.

A number of different types of power sprayers are used from which the spraying can be done directly from trucks at distances varying from 50 to 100 feet; some from pressure tanks, others from rotary oil pumps driven by gasoline engines, or by power taken from the truck motor. Approximately all the oiling of the fresh water areas which are tributary to marsh lands is done with knapsack pumps. These are entirely inadequate when 500 to 600 acres are to be gone over. One instance where power spray pumps are used is on the property of the California Fruit Canners Association. This ranch consists of 2,000 acres and has 15 miles of drainage canals, every foot of which is covered with oil three or four times a year to prevent breeding.

CONCLUSIONS

The public is satisfied with the results of the efforts put forward by the mosquito abatement districts, as evidenced by the few complaints received at their offices. The cost is low, averaging 80 cents a year to the property owner of a 5-room house assessed at $1,000. Mosquito abatement has been partly responsible for the rapid growth in population and heavy expansion in real estate values in these areas, whereas before the districts were organized they were at a standstill.

SANITARIANS STUDY COST OF MEDICAL CARE

AS THE result of a conference of some 60 physicians, economists and sanitarians in Washington, D. C., May 17, a committee has been organized to study the cost of medical care. Dr. Ray Lyman Wilbur, president of Stanford University and a recent president of the American Medical Association, presided at the first session where the extent, adequacy and cost of medical services in the United States were broadly presented by Dr. Louis I. Dublin, Dr. Haven Emerson of New York, and Dr. C. C. Pierce, U. S. Public Health Service, Fellows of the A.P.H.A., John A. Kingsbury of New York, a member of the A.P.H.A., and Dr. Leo Wolman of New York. The second session, at which plans for systematic and continuing study of the economic factors affecting the organization of medicine were developed, met under the chairmanship of Dr. Lewellys F. Barker of Baltimore, Md. A formal report prepared by a temporary committee which has been at work on this matter for the past year was presented by Dr. Winford H. Smith of Baltimore, Md., and Prof. C.-E. A. Winslow of New Haven, Conn., formerly president of the A.P.H.A. The committee which has the matter in hand plans for an adequately financed 5-year study of the facts. The temporary address of the committee is 1724 I Street, N. W., Washington, D. C.

OCCURRENCE OF THE COLON GROUP ON COMMERCIAL CANDIES *

JOHN WEINZIRL, PH.D., DR.P.H., FELLOW A.P.H.A.
Professor of Bacteriology, University of Washington, Seattle, Washington

IN RECENT years the consumption of candy has increased to such huge proportions that it now averages about 5 pounds per capita per year. The manufacture and sale of 500,000,000 pounds of candy involves its being handled by approximately 100,000 persons of whom some are slovenly in their habits, some are disease carriers, and some are actually diseased. It would be helpful if we knew the extent of the danger involved in the consumption of candies. Very few researches have been made that aid in evaluating this danger.

Stiles[1] found that the used-over starch, employed in molding certain kinds of chocolate centers, contained *Escherichia coli*, while Cummins[2] found chocolate cakes free from this organism. Cummins also made some inoculation experiments which showed that *Esch. coli* and *Eberthella typhi* remain alive 24 days or longer. Tanner and Davis[3] analyzed 30 samples of candy but found no members of the colon group.

It would seem that the investigations made thus far still leave us with only a vague idea as to the probable contamination and the relative amount of danger involved. The present investigation was undertaken with the purpose of increasing the data and of obtaining more definite information as to the occurrence of the colon group on candy.

METHODS EMPLOYED

From the experience gained in the examination of other foods it was apparent that a direct search for pathogens was likely to prove futile, and that it would be necessary to rely upon indirect evidence. In the case of water such evidence is furnished by demonstrating the presence of the colon group which in certain numbers is held to indicate probable sewage contamination, and therefore it is assumed that the water is likely to carry *Ebert. typhi* and other disease bacteria. Obviously similar evidence may be secured in relation to candy by determining the frequency with which the colon group occurs and basing judgment upon that evidence.

In order to save the time consumed in weighing, the unit adopted in this investigation was the "piece" of candy. The method employed was to make enrichment tubes as in water examinations, each tube of lactose bouillon receiving a single piece of candy. If a given piece was too large it was divided and the several portions added to the tube. Controls were made by inoculating a number of tubes with both the candy and *Esch. coli* to make certain that neither the sugar nor the flavoring substance in the candy prevented the enrichment of the colon group if it were present. The enrichment tubes were incubated 24 and 48 hours at 37° C., then Endo agar plates were made from all tubes showing gas. If coli-like organisms appeared on the plates, they were fished, cultured and examined microscopically for verification of colon group.

Samples of candy of different varieties were obtained from a large number of shops in order to secure a wide range of conditions in manufacturing and hand-

* Read before the Food and Drugs Section of the American Public Health Association at the Fifty-fifth Annual Meeting at Buffalo, N. Y., October 12, 1926.

ling. The candy was analyzed as soon as possible after purchasing, usually within a few hours. The following items were noted: (1) kind, (2) color, (3) flavor, (4) source, and (5) manner of handling, *i.e.*, whether with scoop or with fingers.

EXPERIMENTAL RESULTS

In the first study 613 pieces of candy were tested for presence of colon group of bacteria with the results shown in the following table:

TABLE I

SHOWING THE OCCURRENCE OF COLON GROUP ON 613 PIECES OF CANDY

Kind	No. of Pieces	Colon Group: Present	Colon Group: Absent	Per Cent Positive
Hard Glucose	193	3	190	1.5
Satin Pillows	90	2	88	2.2
Hard Mints	50	0	50	0.0
Fudge	40	0	40	0.0
Taffy	9	0	9	0.0
Caramels	69	5	64	7.2
Chocolate Creams..	77	1	76	1.3
Jelly Beans	85	4	81	4.7
Total	613	15	598	2.5

Of the eight varieties of candy tested, the caramels showed the highest percentage of positives for the colon group. This result was a surprise because this type of candy is usually wrapped in waxed paper and should therefore be protected from subsequent contamination. Apparently the contamination occurred at the time of wrapping or earlier.

The second highest contamination was shown by the jelly beans. It would appear that this contamination occurred during dispensing. Apparently the same explanation also holds for the other types showing contamination. This explanation seems highly plausible in the case of the satin finish pillows which are slightly sticky and hence would readily pick up bacteria and hold them.

Assuming that all the apparent contamination was due to handling of the candy, it would seem that the percentage is too high, since there is no valid excuse for such contamination. Either the contamination is excessive or it is not due to handling during the dispensing process.

To increase the number of determinations and to discover, if possible, the source of contamination, a second series was undertaken. The same technic was followed, but all the cultures belonging to the colon group were saved and later their species determined. This additional step was undertaken in order to shed some light on the question of whether the contamination observed was actually fecal. The results found are as follows:

TABLE II

SHOWING THE OCCURRENCE OF COLON GROUP ON 525 PIECES OF CANDY

Kind	No. of Pieces	Colon Group: Present	Colon Group: Absent	Per Cent Positive
Hard Glucose	75	0	75	0.0
Satin Pillows	75	1	74	1.3
Nut Pillows	50	5	45	10.0
Hard Mints	75	3	72	4.0
Taffy	25	1	24	4.0
Jelly Beans	25	0	25	0.0
Caramels	25	0	25	0.0
Nut Caramels	25	2	23	8.0
Hoarhound	25	0	25	0.0
Cinnamon Drops ..	50	0	50	0.0
Easter Eggs	25	0	25	0.0
Chocolate Creams..	50	2	48	4.0
Totals	525	14	513	2.6

Table II shows that the colon group was present on or in 14 of the 525 pieces of candy, and that the apparent contamination was 2.6 per cent. This percentage is practically identical with that of the first series which gave 2.5 per cent.

The percentage of contaminated samples for the different varieties of candy is highest for the nut pillows and nut caramels, 10 per cent and 8 per cent respectively. On the other hand the plain caramels are free from the colon group, while the plain or satin finish pillows show it present in only 1.3 per cent of the samples. Further, the two nut candies furnished 50 per cent of all the apparent contamination, but only 14.3 per cent of the total number of pieces. It appears highly probable that the contamination was carried by the nuts.

The other types of candy showing colon group present were: hard mints, taffy and chocolate creams with 4 per cent each; satin pillows with 1.3 per cent. With the exception of the hard mints this group includes candies which may be described as more or less sticky to the touch. This result agrees with that for the first series. Apparently sticky candies are

more liable to pick up contamination than are the hard varieties.

In this series the cultures isolated from the samples showing colon group positive were replated to insure purity, then their species were determined according to the requirements as given by Levine[4] for the classification of the colon group, as follows:

COLON GROUP: Methyl red, +; Voges-Proskauer, —; Starch, —.
(1) *E. coli:* Sucrose, —; Salicin, +.
(2) *E. acidi-lactici:* Sucrose, —; Salicin, —.
(3) *E. communior:* Sucrose, +; Motility, +.
(4) *E. Neapolitana:* Sucrose, +; Motility, —; Salicin, +.
(5) *E. pseudocorscorobae:* Sucrose, +; Motility, —; Salicin, —.

Answering to these prescriptions the results were as follows:

TABLE III
GIVING SPECIES FOUND FOR THE COLON GROUP CULTURES

Sample No.	Kind of Candy	Species Found	Times Found
124	Hard peppermints	E. communior	1
320	Nut pillows	E. coli	1
363	Nut caramels	E. acidi-lactici	1
372	Nut caramels	E. neapolitana	1
505	Chocolate creams	E. pseudocorscoroba	1
91	Taffy	Could not identify	1
104	Hard mints	Could not identify	1
121	Hard mints	Could not identify	1
251	Chocolate creams	Could not identify	1
278	Nut pillows	Could not identify	1
292	Nut pillows	Could not identify	1
324	Nut pillows	Could not identify	1
325	Nut pillows	Could not identify	1
495	Pillows	Could not identify	1

If only *Esch. coli* and *Esch. communior* are classed as fecal, then it is surprising to find that nearly all the cultures were non-fecal. The source of the non-fecal bacteria is to be found apparently in the materials entering into its composition, especially the nuts. If this be true, then it follows that the contamination due to handling the candies after manufacture is less serious than the percentages would seem to indicate.

DANGERS IN HANDLING

As to method of handling, the data are insufficient since only 172 out of 542 pieces, or 30 per cent, were dispensed with a scoop. Two of these samples, or 1.2 per cent, gave apparent contamination. On the other hand the data sheets rarely showed gas-formers of any kind on glucose or hard candies in the making of which the materials are boiled and hence practically sterilized. These candies have the same chance of contamination by handling as do the others, but practically they never show the presence of the colon group. From the data at hand, it is obviously impossible to state how much of the contamination is due to handling at the time of dispensing.

The data sheets also showed that in several instances the control cultures (three tubes containing candy and inoculated with *Esch. coli*) failed to show either gas or growth. Such failure occurred with the cinnamon drops and some peppermints. This would indicate that the essence used in flavoring the candy either inhibited or actually killed the bacteria, assuming that no other disinfectant was present.

That contamination may occur is obvious on *a priori* grounds. If the person handling the candy is uncleanly in habits, contamination will occur.

REASONS FOR REFORM

While there is no basis for serious apprehension regarding candy, it would seem that there are valid reasons for definite reform in the handling of this product. (1) Candy should not be exposed to flies and dust. This practice is quite generally observed at the present time. (2) Candy should always be handled with a scoop. This seems not to be the prevailing practice. (3) Paper boxes, bags, glass jars, and other containers should be employed to a much greater extent than at present.

SUMMARY AND CONCLUSIONS

1. A total of 1,138 separate pieces of candy purchased in the open market were examined for the presence of the colon group, which was found 29 times or on 2.5 per cent of the samples.

2. The preponderance of the apparent contamination occurred in candies containing unsterile ingredients such as nuts. The significance of this type of contamination remains uncertain.

3. Sticky candies apparently are liable to contamination by handling. The use

of a scoop seemed to lessen the contamination.

4. The bacteria isolated as belonging to the colon group were mostly atypical and hence do not seem to indicate fecal contamination. Typical *Esch. coli* or *Esch. communior* were found only twice in 525 trials.

5. The danger of candy carrying disease bacteria can readily be eliminated by sterilizing the products from which the candy is made, and by using well-known sanitary devices in handling and dispensing it.

NOTE—The assistance of Miss Florence Swanson and Miss Sylvia Johnson is gratefully acknowledged.

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INDUSTRIAL MORBIDITY DATA AND THE PHYSICIAN*

C. O. SAPPINGTON, M.D., DR.P.H.

Medical Director, Montgomery Ward & Co., Oakland, California

NO degree of proficiency in the practice of his art; no amount of erudition in theoretical medicine; no boasted expertness in the management of clinic or hospital will serve the physician in prevention without continuous concise knowledge of the ill-health that exists in the plant and the specific conditions under which it occurs.

It was only a few years ago that this wise dictum was enunciated by Edgar Sydenstricker, statistician of the U. S. Public Health Service.

The extensive collection and analysis of industrial morbidity material is still in the embryonal stage and is beset with all the difficulties attendant upon the development of an unstandardized and inexact procedure.

Due credit must be given the excellent work done by the Informal Committee on the Classification of Industrial Morbidity Statistics. The U. S. Public Health Service, through the efforts of Assistant Statistician Dean Brundage, has also made several comprehensive industrial sickness studies. It is only by such attempts to stimulate coöperative interest that a common basis for comparison and discussion of disability experience can be developed.

Some virgin territory still exists, however, and it is with the risk of repetition of much of the old, but with a possibility of some new suggestion, that reconsideration of a perennial subject is proposed.

TYPES OF DATA

Industrial morbidity material may be easily and naturally segregated under three headings which will be briefly considered in order of their importance.

Sickness—Several extensive studies have shown that sickness disability has caused approximately ten to twenty times the number of cases of absenteeism as have accidents, and in addition the loss of five to seven times the amount of working time.

Physical defects—A great mass of experience is gathered throughout industry each year. To what use can this material be put?

* Read before the Industrial Hygiene Section of the American Public Health Association at the Fifty-fifth Annual Meeting at Buffalo, N. Y., October 14, 1926.

Accidents—The greatest activity in industrial medicine is still centered about injuries. This is a necessary form of work, but has been over-emphasized, probably because of its spectacular appeal and also because of the influence of compulsory state legislation.

SPECIFIC INDUSTRIAL OPPORTUNITIES

Industrial health supervision has, because of its peculiar attributes, certain very definite possibilities:

A check upon the efficiency of the community school health program—Where the personnel of organizations contains large numbers of adolescents, this situation is presented for consideration. (The subject has been considered in detail in a previous paper.)

Minor illnesses—In no field of medical effort is it possible to obtain such accurate results in the reporting of minor illnesses as in industry. The same can be said of minor injuries.

Economic studies—Unusual conditions make possible the securing of fairly accurate figures concerning the loss of time and money, resulting from various types of absenteeism.

Physical defects—The serious study of the occurrence, classification, and effect of physical defects has not been given due regard.

Follow-up studies—The correction of defects in many public organizations is hampered by uncoöperative attitudes. In industry, this situation is subject to greater control.

Periodic health examination—Many groups are now undergoing periodic examination. This material should furnish a valuable basis for future health procedures. Dublin has said that the industrial rates for the degenerative diseases and tuberculosis are two to three times higher than in other walks of life.

APPLICATION OF DATA

Attention has been directed to the various opportunities provided in industrial health practice. Suggestions for the application of collected experience may be made.

The evaluation of physical findings should receive greater and more serious consideration at the hands of industrial hygienists. In reviewing industrial standards of acceptance and rejection, one

TABLE I

PERCENTAGE OF ACCIDENTS ACCORDING TO AGE, IN A MASSACHUSETTS TEXTILE MILL, COVERING AN EXPERIENCE OF 2,500 INJURIES. (COMPARISON IS MADE WITH STATE ACCIDENT BOARD FIGURES.)

	Textile Mill	Acc. Bd.
Under 16	6.7	1.8
16–20	15.8	13.8
21–29	25.9	33.9
30–39	20.3	23.9
40–49	17.4	15.7
50–59	9.6	8.3
Over 60	4.3	3.3

Age incidence is important.

TABLE II

SEASONAL INCIDENCE (ALL DISEASES) EDISON EXPERIENCE, 1918–22 INCLUSIVE

(Adjusted to exclude common colds, influenza, and disorders of digestion.)

Month	No. Cases	Rate per 100 Persons
January	816	40.2
February	662	29.7
March	738	33.2
April	587	26.3
May	524	23.5
June	533	23.9
July	542	24.3
August	597	26.8
September	509	22.8
October	535	24.0
November	543	25.4
December	536	24.0

Fluctuations may sometimes depend upon important seasonal effects.

TABLE III

"COMMON COLDS" BY OCCUPATION DURING 1918–1922 (Edison Experience)

Occupation	No. of Cases	Rate per 100 People in Occupation
Meter testers	187	63
Firemen	230	58
Foremen and assistants	222	53
Clerks	1,633	48
Linemen, first class	146	43
Chauffeurs	110	36
Operators	430	32
Inspectors	211	28
Division head	125	27
Repairmen (auto)	205	10
All occupations	5,328	47

Occupational and sometimes departmental influences may be of considerable importance in evaluating factors in any given industrial morbidity experience.

TABLE IV

CASE FREQUENCY, AGGREGATE TIME LOSS AND AGGREGATE COST, OF TYPES OF ABSENTEEISM FROM EXPERIENCE OF THE EDISON COMPANY OF BOSTON, DURING 1918–22 INCLUSIVE

Causes of Disability	No. Cases	Total Work Days Lost	Total Benefits Paid
Sickness	14,280	83,280	$139,872.40
Ind. accidents	774	13,221	20,472.90
Non-ind. accidents	448	3,377	5,610.90
All causes	15,502	99,878	165,956.20

Industrial executives are now giving considerable thought to time and money losses occasioned by physical disability. Sickness is the chief cause.

is struck by the great variation of regulations in the large organizations and by the apparent lack of minimum standards applicable to all groups. An extensive analysis of our accumulated physical defect experience would appear to be warranted. Perhaps a number of questions would be apropos:

What is a physical defect?

How may physical defects be classified?

What is the relation of defects to the incidence of sickness, accidents and absenteeism?

What part does age, sex and occupation play in the evaluation, evolution, and involution of physical defects?

Are health habits related to physical defects?

What of the degrees of severity, persistence and correctibility?

We are accustomed to assigning a grade to intelligence. Can we grade a given individual according to his physical defects?

Where great bodies of sickness data are collected, based upon thousands of employed persons, endemic indices should be used for the principal types of morbidity. Central bureaus might handle periodic reports, applying these indices. Obviously, common bases of sex, age, occupation and exposure would be involved.

Accident indices might find some application in comparable industries, and with careful consideration of their possibilities.

SUMMARY

Industrial health supervision provides exceptional opportunities for the collection and analysis of morbidity material which is otherwise practically unobtainable. It is only through the careful measurement of this experience that we shall provide a rational basis for the inauguration of changes which must come if progress is to be made in industrial hygiene.

Up to the present time, attention has been concentrated mainly upon accident experience. More thought and effort should be put upon the collection and analysis of material based on minor illness and physical defects. These data could form the background of rationalized preventive medicine in industry.

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DR. CHARLES V. CHAPIN HONORED BY YALE UNIVERSITY

The degree of Doctor of Laws was conferred upon Dr. Charles Value Chapin, president of the American Public Health Association, at the commencement exercises of Yale University on June 22, 1927.

Professor Phelps in his presentation remarks said:

"A graduate of Brown and of the Bellevue Medical College of New York, Dr. Chapin has a magnificent record as a promoter of health and foe of disease. He has been Health Officer of the city of Providence since 1884, and City Registrar since 1889. He is the leading figure in the development and standardization of public health practice in the United States. To him we owe the formulation of the entire modern viewpoint in the control of communicable disease. His book on Sources and Modes of Infection (1910) is highly important.

"To-day the whole world follows his lead. Dr. Chapin has no talent for publicity; but those who are familiar with the history of the movement for public health look back, and at, and up to him."

President Angell, in conferring the degree, paid this tribute to Dr. Chapin:

"To have been instrumental in materially improving the health and happiness of untold millions is a noble achievement. This fact Yale would publicly recognize by conferring upon you the degree of Doctor of Laws and admitting you to all its rights and privileges."

ELECTRICAL DETERMINATION OF VIRULENCE ON DIPHTHERIA CULTURES

I. S. FALK, PH.D., FELLOW, A.P.H.A.
Department of Hygiene and Bacteriology, University of Chicago, Chicago, Illinois
F. O. TONNEY, M.D., J. L. WHITE, M.D., AND L. B. JENSEN, M.S.
Department of Health, City of Chicago, Illinois

IN THE PAPER published in this JOURNAL in November, 1926, Falk Jacobson and Jensen presented a summary of a long series of experiments on the parallel relations between electrophoretic potential and the virulence of pneumococci. They also remarked upon the differences of these potentials for virulent (toxigenic) and avirulent (non-toxigenic) diphtheria bacilli. The studies on diphtheria bacilli have been much extended and will be reported in detail elsewhere. We desire to present here only a summary of certain of the findings and a brief description of a simple procedure which can be used in routine "virulence" determinations on diphtheria cultures.

It will be recalled that live or dead bacteria show many characteristics common to matter in a state of fine dispersion. Like colloids in general, if bacteria in suspension in a fluid (*i.e.* water) are introduced into an electrical field, they move. The movement with bacteria (in approximately neutral solutions) is toward the positive pole of the field (anode). The mobility of a particle of colloidal size in a fluid exposed to an electrical field is known as electrophoresis (or cataphoresis). The movement of the particle is commonly supposed to be due to the existence of an electrical double layer on the surface. And if the particle moves toward the anode it is inferred that the particle is itself "negative"—that is, the layer of negative charges is nearer and fixed to the particle and the positive layer is in the suspending fluid and is mobile. In a fluid of particular composition a specific particle will move to one pole with a velocity which is proportional to the strength of the electrical field. In a given electrical field the velocity of movement of the particle (the mobility) is a measure of the potential difference (electrophoretic potential difference or P. D.) across the electrical double layer at the interphase between particle and suspending fluid. Mobility is the measure of electrophoretic potential.

On the basis of one theory on the origin of electrical double layers, that which is based on Donnan's theory of membrane equilibria and potential differences across semi-permeable membranes, it is to be expected that, other things being approximately equal, the P. D. will be greater the greater the *semi*-permeability of the membrane (*i.e.* the less the *free* permeability of the membrane). From these considerations we were led to expect that toxin producing and excreting strains of diphtheria bacilli will show slower electrophoretic mobilities than non-toxin producing or non-excreting strains. This expectation was examined experimentally and was found to be completely justified.

The mobilities are lowest for such strains as the Park No. 8 which give high toxin concentrations, and highest for strains which give no measurable toxin concentrations ("avirulent" strains, pseudo-diphtheria, *B. hoffmanni*, etc.). As was to be expected, it was also found that there is no sharp line of demarcation by mobility measurements between toxi-

genic and non-toxigenic strains. From the Park No. 8 to the pseudo-diphtheria strains there are gradual quantitative but not qualitative differences. The tests for virulence or toxigenicity commonly employed give qualitative differences only because a qualitative distinction is arbitrarily introduced into the guinea pig method when it is assumed that a culture is without specific toxicity if a particular volume of culture, filtrate, etc., or a particular quantity of bacterial mass does not kill a guinea pig unprotected with antitoxin.

The non-fermenting, avirulent cultures showed mobilities between 7.9 and 10.0 μ/sec. Strains with intermediate mobilities (4.4 to 6.2 μ/sec) were, according to morphological and biochemical characteristics typical diphtheria bacilli, but were not virulent by the guinea pig method. The washed suspensions showed even sharper distinctions between the virulent and non-virulent strains.

In Table II we present one of a number of typical tables in which the guinea pig tests were performed in one laboratory (Department of Health) and the electrophoresis tests in another (University of Chicago). Independent diagnoses of "virulence" were made by the two sets of workers and compared after all the measurements had been completed. The P. D. diagnoses were made without any knowledge of the findings with the animal tests. There were 53 sets of cultures—from 53 throats—of children in a school which epidemiological data indicated was probably a focus of infection in one district of the city. From each of the primary cultures on Loeffler's medium one to five colonies had been picked and cultured in broth. For the first guinea pig tests a composite whole culture was used; for the P. D. tests each of the separate broth cultures was used. Hence, although only 53 animal tests were made, there were 153 P. D. tests. A culture was considered "positive" by the P. D. method if one or more broth cultures gave mobilities below the critical value (which, in this experiment, was 11.3 micra per second); and "negative" if all the cultures from an original throat culture showed mobilities greater than the

TABLE I

ELECTROPHORETIC POTENTIALS ON CORNEBACTERIA

Cultures	48 hr. Broth Cultures (pH 7.2)				Dist'd H_2O Suspensions
			Sugar Free Buffered (pH 7.2)		
	pH Average	P. D. (μ/sec) Average	pH Average	P. D. (μ/sec)	P. D. (μ/sec) Average
Virulent (40 strains)	6.2	3.4	7.2	3.3	7.0
Avirulent (25 strains)					
Non-ferm.	7.0	8.1	7.4	9.1	25.0
Dext. ferm.	5.8	5.5	7.2	8.0	31.0
Sucr. ferm.	5.8	12.0	7.2	9.0	34.0

The details of studies on the control of toxin production by the control of P. D. will be published later.[1] Only a few typical tables may be present here to show the differences in the P. D. on toxigenic and non-toxigenic strains. The results in Table I were obtained with the apparatus described by Falk, Gussin and Jacobson in their studies on pneumococci.[2]

In Table I we present a summary of the P. D. measurements on 65 cultures (40 virulent or toxigenic strains and 25 avirulent or non-toxigenic strains) of diphtheria bacilli. The electrophoretic mobilities are expressed in observed velocities in micra per second (μ/sec). Measurements were made on the whole broth cultures and on the sedimented bacteria in distilled water after they had been washed three times with distilled water. For each strain, P. D. measurements were accompanied by toxigenicity tests on guinea pigs. The strains which were found toxigenic by the guinea pig method showed electrophoretic mobilities between 1.0 and 4.2 micra per second (average for the series—3.4).

critical one.* On the occasion of the first comparison of diagnoses from the two sets of tests, there were agreements on 43 and disagreements on 10. Retests by the two methods showed that of the 10 disagreements, in 4 the P. D. method had given correct (+) and the animal method incorrect (—) results. Of the remaining 6 disagreements, the P. D. method erred 5 times in the "safe" direction, *i.e.*, calling a culture positive instead of negative. Only once did the P. D. method fail to detect a positive culture.

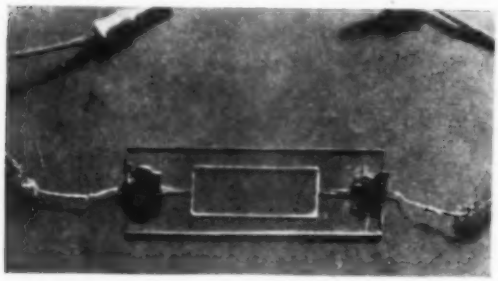

PLATE 1—THE SIMPLE MICRO-CATAPHORESIS CELL

TABLE II

RESULTS OF GUINEA PIG AND ELECTROPHORESIS TESTS FOR "VIRULENCE" ON 53 CULTURES

(Simplified Cell)

"Virulence" by Guinea Pig	"Virulence" by P. D.	Number of Cultures
+	+	32
+	—	1
—	+	5
—	—	15
Total number of cultures.....		53
Per cent agreement.....		89%
"Positive" missed by P. D.....		2%

A more detailed analysis of the cultures used in the experiment of Table II shows that two of the disagreements were on cultures that, by microscopic examination, were "multi-granular, long bacillus" and four were on "typical *C. diphtheria*." Of the latter, the guinea pig method missed four and the P. D. method only one. On

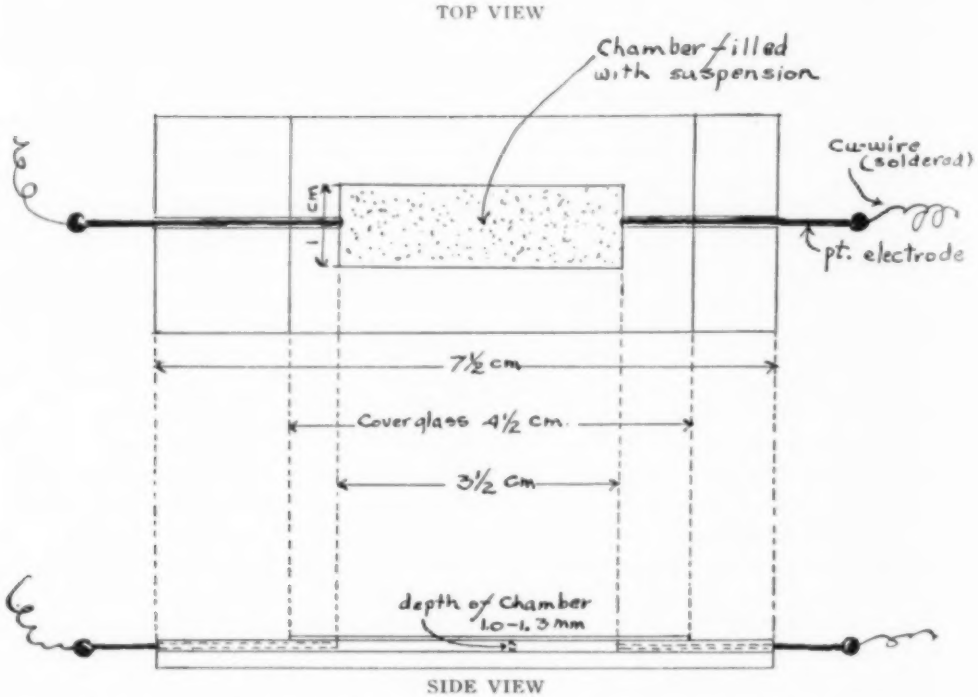

FIG. 1—DIMENSIONS OF CELL MADE FROM MICROSCOPE SLIDES WITH DEKHOTINSKY CEMENT

* The washed bacteria were used in distilled water suspensions.

cultures that were found to be "*C. Hoffmanni*" (5) and "pleomorphic, granular, short bacillus" (10) the two methods agreed in finding them all "negative."

It is obvious from experiments of this sort that the electrophoretic method may prove valuable in routine virulence determinations where rapid diagnoses are desired or are needed to guide administrative procedures, where guinea pigs, technicians and laboratory facilities are not available, or are insufficient.

In order to make the electrophoretic method suitable for bacteriological laboratories, it was necessary to simplify the apparatus. The simplification was made along lines indicated by the findings with washed suspensions of bacteria, because with washed suspensions an apparatus lacking the complicating non-polarizing electrodes could be used. The washed suspensions have extremely low electrical conductivities. Hence, with moderate voltages, little current passes and there is little electrolysis. The electrophoretic mobility is proportional to the *voltage* and is independent of the *current*. A number of simple electrophoresis cells have been devised, one of which we present here because we have tested it extensively. (The electrophoresis data in Table II were obtained with this simple cell.)

In principle, the simple cell is a small glass chamber made from a single piece of glass or by cementing (with DeKhotinsky cement) pieces cut from ordinary microscope slides. Platinum electrodes are sealed or cemented into the chamber. The suspension of washed bacteria is introduced into the chamber, full to but not overflowing, and is covered with a thin cover-glass without permitting air bubbles to become entrapped. (One or two tiny air bubbles, especially if they are not on or near the electrodes, will not significantly affect the measurement.) The electrodes are connected to a source of direct current voltage and the cell is placed on the stage of a microscope. After suitable adjustment of the microscope (Figure I) the voltage is switched on and the velocity of movement of the bacteria is determined, first in one direction and then (after reversing the direction of the voltage) in the other. Measurements in both directions are always necessary to insure that the mobilities are electrophoretic and are not due to capillary or leakage effects.

Before considering the detailed technic we must consider one element of complication in the method. It will be recalled that the mobility of the bacteria (or any small particle) is ascribed to the electrical double layer at its interphase with the suspension menstruum. The particle is moved toward one electrode by the force of the electrical field; the water (or other fluid) containing the free layer of the electrical double layer is moved toward the opposite pole. In the same manner, where the fluid is in contact with the walls of the cell, there is an electrical double layer. But here the fixed layer is on the glass which is not movable and the free layer is in the fluid which is movable. Hence the external or applied electrical field will cause a streaming of the fluid near the walls of the cell. The fluid near the walls tends to drag the adjacent water with it because of its viscous resistance. This motion of the fluid (electrical osmose or endosmose) will affect the motion of the suspended particles differently at different distances from the cell walls because the endosmotic velocity is maximal near the walls and varies with the distance from the wall. The conditions presented in this brief analysis, as they apply to a cell of our design, are indicated diagrammatically in Figure II.

The cell is a closed system. Hence the net motion of the water is zero; the water moving in one direction returns in the opposite direction. The case illustrated in Figure II is for bacteria suspended in water (near pH = 7.2) in a glass cell. In such a system all bacteria thus far studied are negative to the water (the bacteria will move to the positive pole of the electrical field) and the glass is also negative to the water. Near the surface

of the glass the water moves toward the *negative* electrode with a maximal velocity. In the middle of the cell the water moves toward the *positive* electrode with a maximal velocity. Between the middle and the walls the velocities are less, and at some particular distance between the two there is no movement of the water—the drag to the negative pole by the water near the glass is equal and opposite to the drag of the water returning in the middle toward the positive pole.

PLATE 2—THE CELL MOUNTED ON THE MICROSCOPE STAGE

In the layer of water which has no endosmotic velocity, the velocity of suspended particles is the true electrophoretic velocity. Hence, the measurements of electrophoretic velocity of the suspended particles (bacteria) are made on particles in this stationary layer of water. This is accomplished by having the microscope focused on a position in the cell which corresponds to the "stationary layer." There are two "stationary layers," one in the upper and a second in the lower half of the cell. In a cell of the kind described here, the stationary layers are located at a distance of $\frac{1}{2} D \div \sqrt{3}$ above and below the middle of the cell. Thus, if a cell is 100 units deep, the middle is 50 units; $\frac{1}{2} D = \frac{1}{2}$ depth $=$ 50; and $50 \div \sqrt{3}$ is 28.9; the lower stationary level (Vsl) is located at 21.1 units

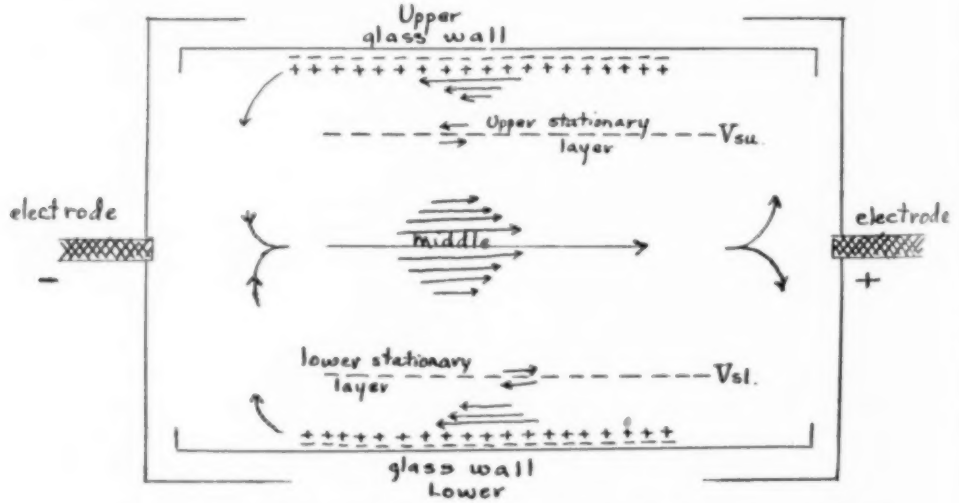

FIG. 2—SCHEMATIC REPRESENTATION (SIDE VIEW) OF POSITIONS OF ELECTRICAL DOUBLE LAYERS, DIRECTIONS OF ENDOSMOTIC STREAMINGS AND LOCATIONS OF THE STATIONARY LAYERS

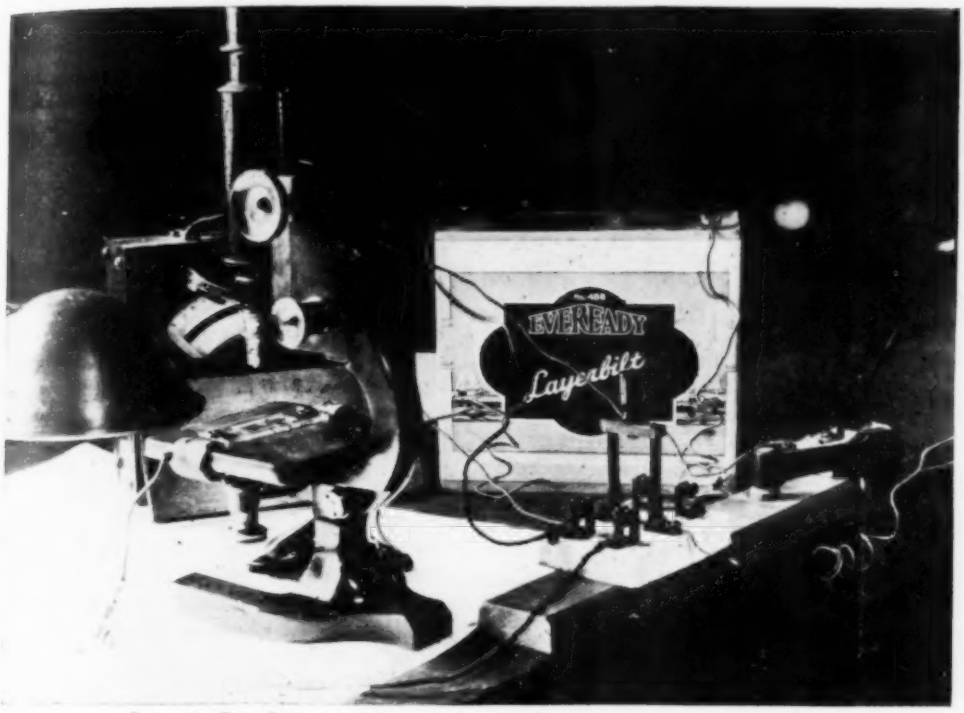

PLATE 3—THE COMPLETE ASSEMBLY FOR THE MICRO-CATAPHORESIS APPARATUS

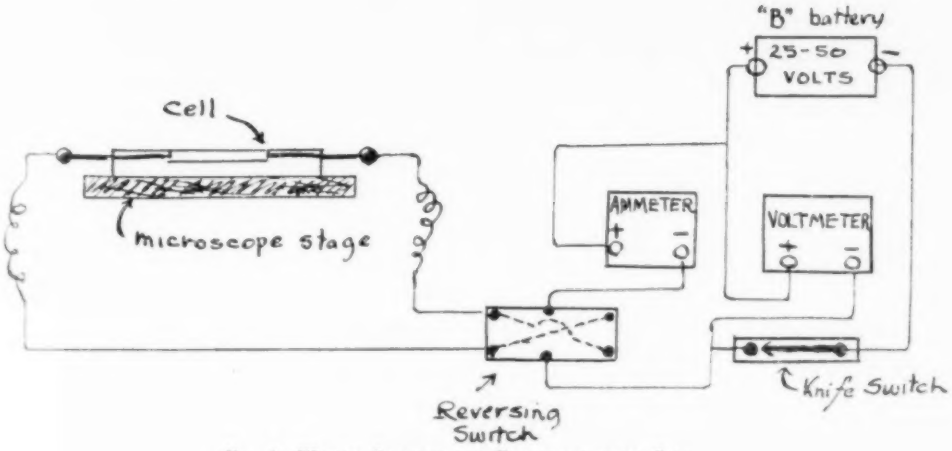

FIG. 3—WIRING DIAGRAM FOR ELECTROPHORESIS CELL

from the bottom of the cell and the upper one (Vsu) at 78.9 units from the bottom. These levels, determined for each cell, are the ones at which the electrophoresis measurements are made.

We are now experimenting with cells of such design as eliminate the endosmotic streaming and the necessities for these corrections.

Following are more detailed directions for the electrophoresis measurements:

1. *Cultures*—If pure cultures are already available they should be grown in veal infusion, 2 per cent Witte peptone broth, initial pH = 7.2—7.4, at 37° C., preferably for 48 hours.*

* A method of reducing the incubation period without changing the final P.D. measurements is being developed now.

If original cultures from throat, nose, etc., on Loeffler's medium are to be used, three to six separate colonies should be transferred to broth and used as for pure cultures. Sediment the bacteria by centrifugation; resuspend in distilled water and repeat twice more. Use these three times washed organisms in distilled water in a suspension that is definitely cloudy to the naked eye. The distilled water should have a pH near 7.0.

2. *Cell* *—Clean by brushing with soap and water and rinsing under running tap, and then, distilled water. (If the cell is all-glass, use chromic acid cleaning mixture instead of soap and water). Fill with suspension nearly to overflowing with a fine tipped pipette. Place cover-glass over cell without trapping air bubbles. Press down cover-glass so that it rests on the glass and not merely on the fluid in the cell. Wipe up excess fluid with filter paper. Connect electrodes to source of direct current voltage and place the cell on the stage of the microscope so that the objective is over the central portion of the cell.

3. *Source of Voltage*—Any direct current source may be used. If the lighting circuit is D.C. this is satisfactory. A rheostat may be used to reduce the voltage applied to the cell electrodes. It is preferable to use ordinary radio "B" batteries, from which 25 or 45–50 volts can be taken. An impressed voltage of 25–50 volts is satisfactory.

4. *Microscope and Equipment*—Any microscope with a calibrated head on the fine adjustment screw will serve. We have found the following optical system satisfactory: objective—Bausch and Lomb, 8 mm., 0.50 n.a., 21x (long focal working distance); ocular—Bausch and Lomb, 25x, compensating; ocular micrometer—Sedgwick-Rafter ruling, placed over the diaphragm of the ocular. Calibrate the ocular micrometer with a stage micrometer so that the diameter of each large square in the ocular micrometer is known in micra. Have available a good stop-watch reading to a fifth of a second.

5. *Calibration of the Cell*—Bring the calibrated head of the fine adjustment screw to zero and focus the microscope on the bottom of the chamber in the cell with the coarse adjustment. By turning the fine adjustment head until the microscope is focused on the bottom of the cover-glass, determined the depth of the cell chamber in units on the head of the fine adjustment screw. Using the formula given above, focus the microscope on the upper or lower "stationary level." Do not change this focus.

6. *Illumination*—Natural or artificial illumination should be adjusted as for hanging drop examinations.

7. *Electrical Connections*—The cell should be wired to the source of voltage through a reversing switch so that the polarity of the electrodes can be reversed quickly, easily and without jarring or moving the cell. It is desirable to have a small ammeter and a small voltmeter in the circuit to provide direct checks on the circuit. The voltmeter should show that the impressed potential is constant and the ammeter that practically no current is flowing (*i.e.*, less than 10 milliamperes) and hence that the suspension in the cell is a very poor conductor. An extra main switch in the circuit, as indicated in our diagram, is desirable. (Note: All that is *essential* is the cell, a good "B" battery and a reversing switch.)

8. *Measurements*—After the eye has become adjusted to the illumination of the field of vision in the microscope, the bacteria in clumps or singly should be plainly visible. With one hand on the reversing switch and the other controlling a stop-watch, throw on the voltage. As bacteria come into focus, moving across the field of vision, determine the time it takes for them to pass the diameter of one, two or more squares on the ocular micrometer. Make at least five measurements on different bacteria or clumps. Reverse the orientation of the electrical field by reversing the switch and repeat the measurements with the bacteria moving in the opposite direction. Average the measurements for equal numbers of observations in the two directions. This average measurement is a velocity in "seconds per—*micra." Calculate velocity in "micra per second."

Dismount the cell and clean as before.

9. *Standardization Against Guinea Pig Tests*—In each laboratory it is essential that P.D. measurements be made in parallel with guinea pig tests, using cultures of high, intermediate and low toxin-producing potencies. Furthermore, in each series of P.D. measurements at least one (and preferably more) known toxin-producing and non-toxin-producing strains should be examined as controls on the test cultures. The electrophoretic mobility which is used as a

* It is anticipated that cells and accessory equipment will be made according to our specifications by the Central Scientific Company of Chicago.

* The value here is determined by the stage micrometer equivalents of the ocular micrometer units and by the number of ocular micrometer unit squares across which the bacteria moved in each measurement.

dividing line between the "virulent" and "non-virulent" cultures should be chosen from such controlled experiments. All cultures showing mobilities less than the specified "critical" one are called positive (*i.e.*, "virulent") and all cultures showing mobilities greater than the "critical" value are called "negative" or "avirulent."

10. *Caution*—It is recommended that if this method is used, it be placed in the hands of Schick-negative individuals only.

The value of this method in studying highly virulent, non-toxigenic strains (septicemic) is still uncertain.

It may appear from this description of technic that the method is complicated and cumbersome. In practice, however, it will be found simple and rapid. After the apparatus is arranged and standardized, the conductance of each measurement need not take more than two to five minutes. The washing and centrifugation of the original broth cultures, where a large number are to be examined, can be carried on by one technician while another is at the microscope.

Finally, we may be permitted to add that this paper is presented here and at this time only as a preliminary report. It is hoped that other laboratories will experiment with the method to determine its values. They may find, as we have found, that it is useful and reliable in providing quick, tentative "virulence diagnoses" without using animals, without waiting days for the results of animal tests and where animal tests are inconvenient or impossible. Further experimentation may bring to light shortcomings of the technic that may be avoidable. The value of the method can be determined only as the results of wider experience become available.

NOTE: We express our indebtedness to Dr. Herman N. Bundesen, Commissioner of Health, who has actively encouraged these studies.

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1. *J. Bacteriol.*
2. *J. Infect. Dis.*, 37:481, 1925.

CENSUS BUREAU ISSUES INFANT MORTALITY SUMMARY

The Bureau of the Census has issued a summary of provisional birth, death and infant mortality figures for 1926 in the birth registration area exclusive of Idaho, Massachusetts, Mississippi, North Carolina, Utah and Vermont, from which complete transcripts for that year have not been received. The Bureau announces that birth rates for 1926 were lower than for 1925 in 26 of the 28 states for which figures for the two years are shown in the summary. The highest 1926 birth rate (26.4 per 1,000 population) is shown for Florida and the lowest (14.2) is for Montana.

Death rates for 1926 were higher than for 1925 in 23 of the 28 states shown for both years. The highest 1926 death rate (15.3 per 1,000 population) is shown for Florida and the lowest (7.8) for Montana.

Infant mortality rates for 1926 were generally higher than those for 1925, as 21 of the 28 states show higher rates in 1926. For states, the highest 1926 infant mortality rate (92.9) appears for Delaware and the lowest (51.6) for Oregon.

Infant mortality rates are shown for both years for 48 cities of 100,000 population or more in 1920. For 27 of these cities the 1926 infant mortality rates were higher than those of the previous year, the highest 1926 rate (107.4) being for Richmond, Va., and the lowest (38.7) for Portland, Ore.

EDITORIAL SECTION

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CONQUEST OF DIPHTHERIA

THE readers of this JOURNAL are familiar with the notable work in the city of Auburn, New York, in the attempt to demonstrate the eradicability of diphtheria, and during the course of the work we have had papers by the Health Officer of that city read at our meetings and published in this JOURNAL.

March 8, 1927, marked the end of the third year during which period no death from diphtheria has occurred. In the city of Auburn during 1926 only seven cases of the disease were observed, as against eighteen for 1925. During the present year seven cases have developed, four of which were in one family. Three of them had been treated with toxin-antitoxin mixture, but they had not had time to develop full immunity, though the beneficial action of the vaccination was manifested by the mildness of the disease. Of the remaining three cases, one was in a boy, and one was in a baby, neither of whom had been immunized, while the third case occurred in a child who had received a single dose of toxin-antitoxin three years previously.

We have noted with great pleasure the widespread publication of these results in the daily press. One such example as Auburn has given is worth many years of talking. We believe that Auburn has demonstrated that complete eradication of diphtheria is possible. The experience in that city will make it easier for other cities to adopt the eradication plan, and even to extend it to the full acceptation of the Seymour Plan.

A TEST FOR VIRULENCE OF DIPHTHERIA BACILLUS

ON another page we are publishing a second article by Falk and his coworkers which carries the promise of settling at least one of the problems of the public health officer.

Public health laboratories are constantly confronted with the task of distinguishing virulent from avirulent strains of diphtheria, especially in connection with carrier cases. At present the only available method is guinea pig inoculation, which is not altogether satisfactory. It requires the inoculation of two guinea pigs, one with the suspected culture, the other with the culture plus a protective dose of antitoxin. In case the culture is virulent, the unprotected pig dies, which means an autopsy and culture identification.

Falk and and his coworkers have recently suggested an electrical method for this purpose. Their studies have shown a distinct relationship between the viru-

lence of bacteria and the electrophoretic potential which exists between the bacterial cells and fluid in which they are suspended. With pneumococci it was found that the P.D. was in direct proportion to the virulence—a high P.D. indicated a high degree of virulence.

In the case of diphtheria, the condition was reversed and the lowest P.D. was given by the highly toxigenic Park No. 8 strain, while avirulent cultures consistently gave a high P.D. In a large series of cultures close agreement was found between the results obtained by the electrical method and guinea pig inoculations.

If further studies confirm the promising results already obtained the adoption of this test as a routine measure will add another milestone along the triumphal road of public health achievement. It will also serve to unite more closely the fields of bacteriology and colloid chemistry, a relationship which has already proved its value and is steadily gaining recognition with each advance.

THE COST OF MEDICAL CARE

WITH the passage of the years, the line between preventive and curative medicine has come to be a more and more artificial one. The effective control of the principal causes of death at the present time can be attained only by the application of preventive medical care to the individual; and every thoughtful health officer knows that large sections of the community, for one reason or another, do not receive the attention of qualified physicians when they most need it. Members of the AMERICAN PUBLIC HEALTH ASSOCIATION must therefore welcome any serious attempt to study the fundamental factors in the problem as to how the best medical care can be secured for the whole people at a minimum cost.

At a conference held in Washington, April 1, 1926, this whole question was discussed by a group of physicians, public health workers and economists, and a committee of five was appointed to give further study to the problem. This committee consisted of Dr. Winford H. Smith of Johns Hopkins as chairman, Dr. L. F. Barker, Dr. Michael M. Davis, Professor W. H. Hamilton, and Professor C.-E. A. Winslow, with H. H. Moore, of the U. S. Public Health Service, as its secretary. This committee reported to a larger conference held in Washington on May 17 last with a definite plan for a study of the questions involved, and this project was formally endorsed and the committee of five directed to enlarge its membership and proceed with the task. If funds can be obtained, it is planned to make an intensive study of the capital invested in medical practice, of the cost of medical services to the average family in relation to the family budget, under various social and geographical conditions and under various forms of medical practice. The program of the committee calls for a five-year study and we believe that the results from such a study should prove of far-reaching importance from the standpoint of the promotion of the public health.

PREVENTION OF ROCKY MOUNTAIN SPOTTED FEVER

PROGRESS in the prevention of disease is always a pleasant thing to record, and we need to advertise each success made by rational methods in order to counteract the influence of the many cults which are continually cropping up, most of which have been shown to be short cuts to the practice of medicine without medical training.

Rocky Mountain spotted fever is the latest disease to succumb to vaccination. In 1924,[1] Spencer and Parker announced their success in vaccinating guinea pigs

against spotted fever. In 1925,[2] extending their work to human beings, they developed a method of vaccination against this disease, though the germ has not been artificially cultivated. The virus is found in infected ticks (Dermacentor andersoni), and reaches its greatest concentration two to four days after the beginning of adult feeding. A potent virus cannot be obtained from the tick in the same stage in which it is infected. The production of the vaccine, which is made from an emulsion of infected ticks, depends upon a high concentration of the virus in the ticks from which it is made.

A number of people were vaccinated in the Bitter Root Valley last year, none of whom contracted the disease. By the spring of 1926, thirty-four laboratory and field workers had been vaccinated. Four cases of spotted fever occurred among them, all of which recovered. Among them was one man 62 years of age, the first person over 50 years of age ever known to have recovered from this disease. This success has led to the extension of the method, and already this year between three and four hundred inhabitants of the Bitter Root Valley have been inoculated.[3] Since the mortality of spotted fever is high and since we have been absolutely impotent against it in the past, this success is particularly gratifying.

Among those vaccinated are many sheep herders whose occupation compels them to spend the summer out on the plains under constant exposure to ticks. One can imagine what a great relief it must be to these men to know that they are free from the danger of contracting a disease which is more than apt to result fatally.

It will be remembered that the mortality may run as high as 90 per cent, and that five investigators, including Dr. McClintic of the Public Health Service and Dr. McCray of the State Board of Health of Montana, have lost their lives in studying the disease.

1. *Pub. Health Rep.*, Nov. 28, 1924.
2. *Pub. Health Rep.*, Oct. 9, 1925.
3. Announcement by Public Health Service, Apr. 5, 1927.

PRACTICE WHAT YOU PREACH

EDUCATION of the laity in the principles of hygiene and sanitary science has often been stressed as essential to human welfare, as indeed it is. Popular health instruction will not make real progress, however, until every one of its teachers personally puts into practice the procedures advocated for the layman. Physicians and health workers who promote health examinations, for instance, should set a good example by having an inspection made of themselves. All sanitarians should pay attention to the rules for right living and translate personal hygiene into everyday habits. Organizations which promote public health or are interested in this subject should take stock of their own affairs, such as the ventilation, illumination, sanitation of their offices or institutions, and the health and safety of their staffs. Carelessness in regard to such matters does not pay and does not inspire public confidence. When, for instance, an association which sets itself up as an authority on public health provides a common drinking glass for the use of several speakers at a meeting, the effect of the agitation for the abolition of this pestiferous method of spreading disease is somewhat diminished. Such a flagrant disregard of sanitation actually occurred recently and was rather pungently called to the attention of the officials responsible by no less a person than one of the laymen who was present for the purpose of being edified. Such an event may have been an oversight, but it ought never to happen again. " Physician, heal thyself " is a good motto.

ASSOCIATION NEWS

MEETING OF THE EXECUTIVE BOARD

THE Executive Board met on Friday, June 3, in the offices of the Association. The President, Dr. Charles V. Chapin, was in the chair and eight members were present. A digest of the proceedings is given below:

Committee on Dairy Products—The Executive Secretary was instructed to express to this committee the opinion of the Executive Board that a substantial report should be presented at the Annual Meeting in addition to the special session on milk which it will arrange.

Annual Meeting Policy—A report was submitted recommending the rotation method of selecting annual meeting cities. This was approved in principle and was referred back to the committee for reconsideration of the districts outlined. This report will be presented to the Governing Council at Cincinnati.

Regional Meetings—The Executive Office was authorized to assist in the programs and in the development of regional meetings where they seem likely to advance the policies and interests of the Association.

Registration Fee at Cincinnati—A registration fee of $2 for non-members of the Association at the Cincinnati Annual Meeting was approved, with the understanding that wives of delegates and members of their families were to be excepted. Approval was given to the Cincinnati Local Committee's plan to charge for entertainment to non-members.

Nominating Committee—Dr. M. P. Ravenel, Columbia, Mo., Dr. W. H. Peters, Cincinnati, O., and Dr. A. J. Lanza, New York, N. Y., were appointed members of the Nominating Committee for the Cincinnati Annual Meeting.

Time for Closing Polls—It was voted to close the polls for the election of members of the Governing Council at one o'clock on Thursday, October 20.

Revision of Budget—A budget revised to accommodate the Association's expanding activities and to cover the period from May 1 to December 31, 1927, was approved.

Appointment to Journal Editorial Committee—Mr. A. P. Miller, who has been editing the Public Health Engineering Section of the JOURNAL for some months, was formally appointed a member of the Editorial Committee of the JOURNAL.

Translation of Standard Methods of Water Analysis—It was voted to authorize the League of Nations to proceed as it sees fit with the translation into German and French of *Standard Methods of Water Analysis*, 1925 edition.

Participation of the A.P.H.A. in the Program of the A.A.A.S.—It was voted to request Section N (Medical Sciences) of the American Association for the Advancement of Science to permit the Association to participate in one of its sessions to be held at the Sixth Annual Meeting in Nashville, December 26 to 31, 1927.

DEATH OF DR. ABRAHAM ZINGHER

DR. ABRAHAM ZINGHER, eminent bacteriologist and Assistant Director of the City Research Laboratory of New York, was found asphyxiated by gas early Sunday morning, June 5, at the New York City Research Laboratory. When found by his wife after a six-hour search he was seated on a chair, his head resting on his arms on the laboratory table, as if he had been dozing when overcome. The gas tube of a Bunsen burner on the laboratory table was found detached.

Dr. Zingher had gone to the office early Saturday morning where he had worked with Dr. William H. Park, Director of City Laboratories, correcting examination papers of New York University, where they both hold chairs.

Evidently he had devoted the afternoon to laboratory work, on a refinement of the Dick immunization treatment for scarlet fever. It was after unsuccessful attempts to locate him at hospitals where he has been associated, that Mrs. Zingher insisted upon going to the laboratories herself to take part in the search.

Dr. Zingher leaves four children, the youngest, a daughter of five weeks.

In the death of Dr. Abraham Zingher, the

American Public Health Association has lost one of its most productive and influential members.

Dr. Zingher came to this country as a boy

ABRAHAM ZINGHER, M.D.

from Roumania. After obtaining a thorough education, he received his degree of doctor of medicine at the Cornell Medical School in 1908. He spent four years at the Mount Sinai Hospital, taking both the medical and surgical services. His work as interne gained the approval of the attending physicians and surgeons of the hospital. While at the hospital, he had felt a strong inclination for research work. This led him on leaving the hospital to enter the laboratories of the Health Department of New York City.

Soon after his entrance into the Laboratories in 1912, Schick published his discoveries. I asked Dr. Zingher to join me in a series of investigations upon the study of the Schick test, especially as to its reliability in differentiating between those who were immune and those who were not immune to diphtheria. This led him to undertake to utilize the Schick test to determine the value of diphtheria toxin-antitoxin and toxoid in producing immunity to diphtheria.

Beginning with a number of institutions he immunized the Schick positive children and then from year to year studied the results. The immunity was found to be lasting. The Health Department determined to offer immunization in the schools and he took charge of the work in the boroughs of Manhattan and the Bronx.

The publication of the work on scarlet fever by Drs. George and Gladys Dick caused him to investigate the Dick test in the same way as he had studied the Schick test, and to estimate its importance in separating the immune from those not immune. He also used the test to determine the value of the immunization of the scarlet fever toxin.

By numerous papers and addresses he has brought before the public health workers of the country the results of his studies. His discoveries and their application to the prevention of diphtheria and scarlet fever have been of world-wide importance and will be a lasting monument to his memory.

Beside his work in the laboratory and its applications in preventive medicine, Dr. Zingher was interested in the teaching of public health to students and medical officers. In 1913, he became instructor in bacteriology at the New York University and Bellevue Hospital Medical School; later he became a lecturer, and finally an assistant professor in bacteriology and hygiene. He greatly influenced his students by his enthusiasm and high ideals.

He died suddenly at the age of 42 while in the full activity of his researches and teaching, and his loss will be greatly felt by the Department of Health of the City of New York and New York University, as well as by the medical profession and the people at large.

WILLIAM H. PARK, M.D.

NEW MEXICO PUBLIC HEALTH ASSOCIATION MEETS

AT the Third Annual Meeting of the New Mexico Public Health Association, held June 2–3 at Taos, New Mexico, the following officers were elected:

President, Dr. C. W. Gerber, full-time county health officer, Dona Ana County, Las Cruces; Vice-President, Edith Hodgson, R.N., Sheppard-Towner field nurse, Box 750, Santa Fe; Secretary-Treasurer, Paul S. Fox, C.E., chief,

Division of Sanitary Engineering and Sanitation, New Mexico Bureau of Public Health, Box 750, Santa Fe.

About 25 members and 17 guests attended the sessions. The program considered subjects in the field of milk sanitation and food handling, breast feeding of infants, the control of German measles and chickenpox, laboratory control of typhoid fever, and coöperation between the child welfare bureau and the bureau of health. A discussion session led by Dr. C. H. Douthirt of Clayton was based on the subject of "Coöperation with the Medical Profession." Dr. D. B. Williams of Santa Fe discussed "Standardization of Record Forms and Files for Full-time County Health Units."

HONORS TO A.P.H.A. MEMBERS

DR. HUGH S. CUMMING, Surgeon General, U. S. Public Health Service, Fellow A.P.H.A., who spoke on the "Relation of the Physician to the Public" at the commencement exercises of the Medical College of Virginia, Richmond, was awarded the honorary degree of doctor of science at these exercises. Dr. Cumming is an alumnus in medicine both of the University of Virginia and the Medical College of Virginia.

HERMAN N. BUNDESEN, M.D., Commissioner of Health of Chicago, and first vice-president of the A.P.H.A., received the honorary degree of doctor of science from Northwestern University at its commencement, June 20.

W. W. PETER, M.D., Fellow A.P.H.A., received the degree of Doctor of Public Health from Yale University on June 22. Philip S. Platt, Fellow A.P.H.A., and Chairman of its Public Health Education Section, received the degree of Doctor of Philosophy.

ARTHUR E. GORMAN, Chief Sanitary Engineer of the Department of Public Works, Chicago, Illinois, Fellow, A.P.H.A., and secretary of the Public Health Engineering Section of the Association, was honored at the recent meeting of the American Water Works Association in Chicago when he was awarded the Diven Memorial medal. The medal is awarded to "the active member (not an officer) who during the year has best served the Association."

Mr. Gorman has been instrumental in obtaining appropriations for Chicago's new experimental plant. Recently, S. B. Gerger, executive director of the Chicago Health Department, said: "Mr. Gorman, more than anyone else, is responsible for Chicago's low typhoid rate, which is less than 1 per 100,000."

ARTHUR TOMALIN, ASSOCIATE SECRETARY

ARTHUR TOMALIN who for some years has been a member of the Public Health Education Section of the A.P.H.A., and a member of the Editorial Committee of the JOURNAL, joined the staff of the Association on June 1, as Associate Secretary. While Mr. Tomalin will be chiefly concerned with the Association's publications, its book service, and syndicated health bulletins, and publicity service, he will be active in many other phases of the A.P.H.A.'s expanding program.

ARTHUR TOMALIN

For the last two years Mr. Tomalin has been Managing Editor of *Pictorial Review*. Prior to that he was director of publications of the American Child Health Association, following a long experience as a newspaper and magazine editor and publicity director. He is consulting editor for the Camp Fire Girls' Organization and a member of various publication and publicity committees.

UNIVERSITY OF CINCINNATI

OUR RETURN TO CINCINNATI

FIFTY-FOUR years ago, seventeen sanitarians, pioneers in the public health field of America, met in the city of Cincinnati for the first formal program meeting of the American Public Health Association. Two other organization meetings had been held prior to this in New York and Long Branch, N. J. That first week in May, 1873, in his presidential address at Cincinnati, Dr. Stephen Smith discussed sanitary science, longevity, vital statistics, and disease. Dr. Smith's subject was "Limitations and Modifying Conditions of Human Longevity, the Basis of Sanitary Work." More than a thousand members of the Association will consider these same subjects from a similarly constructive but more modern viewpoint, when they return to Cincinnati in October for our Fifty-sixth Annual Meeting.

In this interim of more than half a century the Association, inspired by the foresight and practical idealism of its founders has expanded, reaching into broader and more varied fields of activity for the universal improvement of the public health. Again in 1916, the A.P.H.A. met in Cincinnati for its Forty-fifth Annual Meeting. Records of 1916 say it was the most successful of all meetings up to that time. When the Association returns to Cincinnati in October for a week to consider the pertinent health problems confronting sanitarians to-day, it will see a new Cincinnati—a city that has kept abreast of the times in its development for public welfare, just as the Association itself has bounded forward in these fifty years.

Historically Cincinnati was known as "The Gateway to the South." By virtue of its location some have called it the "most Northern city" and others the "most Southern city." It is built on seven hills on the north bank of the Ohio river between the valleys of the Little Miami and the Great Miami Rivers. Woven into its legends are stories of Indian trails, incidents of the covered wagon days, the era of commercial development, when canals were the most modern means of transportation, and the advent of the steam engine with its mesh-like work of steel rails.

Pioneers drifting down the Ohio River in search of new country stopped at Cincinnati in 1787. A fort was built a couple of years later in charge of Major Dougherty, U. S. A. Fort Washington, as it was called, figured in the Indian Wars and was a base for the campaign of "Mad" Anthony Wayne which practically annihilated the Indians in that territory. When a permanent settlement was founded near the fort soon after it was called Losantiville. But when General St. Clair took command of the fort in 1791, the name was changed from Losantiville to Cincinnati in honor of the Society of Cincinnatus of which General St. Clair was a member. This society was made up of officers who had served in the Revolutionary War.

The earliest white inhabitants of Cincinnati were Americans of English descent. Later there was a German migration. These early citizens laid the foundations for this progressive community, which to-day has a population of

CINCINNATI GENERAL HOSPITAL

401,000 within its city limits. And with the contributing population of towns across the river in Kentucky, Cincinnati approximates the million mark. It is the center for nine large railroad systems and is the only municipality in the world owning an interstate steam railroad. This runs from Cincinnati to Chattanooga, Tennessee.

Its industries have developed until it has become a leading market for brushes, soap, wood working machinery, machine tools, washing machines, leather goods, and playing cards. Its large piano factory offers employment to several hundred. Cincinnati is one of the largest lumber markets in the United States and it is the coal center of the country.

Wandering along the highways and by-ways the delegate to the Annual Meeting will find much to remind him of the historical background of the Queen City. He can visit the home of Thomas Buchanan Reed, poet and portrait painter, on Eighth Street adjoining the Literary Club. Here "Sheridan's Ride" was composed. Over on Walnut Hills is the house of Lyman Beecher where Harriet Beecher Stowe wrote *Uncle Tom's Cabin*. In fact, much of the material of this story of slavery was gathered in the city of Cincinnati. He may want to visit Clovernook, once the homestead of Alice and Phoebe Cary, now a home for the blind. General U. S. Grant was born at Point Pleasant, near Cincinnati. A few miles down the river from the city is the tomb of President William Henry Harrison, the hero of Tippecanoe. And as for comtemporary biography—it was in Cincinnati that Thomas A. Edison began his career as messenger boy.

In October the parks of Cincinnati lure the motorist and the pedestrian. He will want to visit the Art Museum in Eden Park where paintings by the old masters and modern American artists, exquisite pieces of sculpture, textiles and jewelry from many countries, rare tapestries, metal work showing the evolution of the art, musical instruments, glass from many parts of Europe and Asia, and ceramics are exhibited. One room of the museum is devoted to the life and art of the people of the French Congo. In connection with the museum is the art academy for pupils in painting, modeling and designing.

Music lovers know about the famous Cincinnati Symphony Orchestra, and delegates may have an opportunity of hearing it. As further proof of its genuine interest in the art of music, the city has a Conservatory of Music and a College of Music.

The Museum of Natural History on Broadway and the Cincinnati Zoölogical Gardens are places to jot down on your sight-seeing calendar. You will want to visit the Rookwood potteries where some of the finest and most artistic designs of pottery are put out to compete with the increasing importation of foreign potteries each year. Excursions will be planned by the local entertainment committee to visit the Rookwood factory and shops.

Its institutions of higher education for the training of the professions and arts are the University of Cincinnati with its fine Medical College and College of Engineering, and also St. Xavier College, Ohio Dental College, Ohio Military Institute, and Ohio Mechanics Institute.

Cincinnati has the distinction of being the first city in the United States to establish a municipally owned university. The University of Cincinnati is located in Burnet Woods. Since its establishment in 1870 the University has become one of the leading institutions of the Middle West for the preparation of students in the arts and professions.

Its College of Medicine is listed among the Grade A schools of the country and has an excellent department of preventive medicine directed by Dr. William B. Wherry. Last year the College of Medicine had an enrollment of 270 students. One of its features is the opportunity for close coöperation with the Cincinnati General Hospital, one of the most notable hospitals in America. To make the coöperative program of the medical college and the city hospital more effective Dr. A. C. Bachmeyer, dean of the College of Medicine, is also superintendent of the Cincinnati General Hospital, which, in this case has proved to be a most successful arrangement for a teaching hospital. This arrangement brings the medical work, the nursing and teaching in the hospital under the direction of the Board of Directors of the University. Members of the staff of the Medical College also serve on the staff of the hospital.

Cincinnati boasts of its city's hospital, not only because of its appointments to care for the city's sick and give them the best surgical and medical treatment, but because of its architectural plan. It is one of the finest examples of the pavilion type of hospital architecture in America. The main wing of the hospital has 535 beds for surgical and medical cases and there are 150 beds to care for contagious disease patients. The Children's Hospital will be a place of interest for pediatricians during their week in Cincinnati. The Outpatient Department, a division of the College of Medicine, is also housed in the hospital buildings.

The general administration of the hospital is under the direct control of the City Manager. The funds for operating the institution are derived from appropriations made by the City Council from general taxes.

Besides the Cincinnati General Hospital there are twelve private hospitals in the city.

There will be an opportunity to see how Cincinnati conducts its public health work and delegates are encouraged to visit the headquarters of the Public Health Federation at 312 West Ninth Street. The city has a well-rounded program for infant welfare work, prenatal and preschool program, school medical inspection and nursing service, tuberculosis clinics, a dental hygiene and a mental hygiene program, and a public health nursing service.

Special provision is made for the crippled and hard-of-hearing children in the public schools and for the conservation of eye-sight of school children. There is a handicap placement bureau which solves many of the social and economic problems of the community.

Cincinnati is proud of its two model housing developments, and visitors will be amply repaid for a trip to Mariemont, the Garden Village.

The public health engineer will turn his attention to the Cincinnati Water Works and Filtration Plant which provides the city with 50 million gallons of water a day. The public health officials have invited delegates, and especially engineers to visit Intake Pier, Intake tunnel, the river pumping station, purification plant, Eden Park Reservoir, Eastern Hills Tanks, Mt. Auburn Tanks and Winton Road Reservoir. The Marine Hospital Building has now become the laboratory and experimental research station for stream pollution problems under direction of the U. S. Public Health Service. A rapid sand filtration plant, including disinfection with chlorine gas, has also been constructed to cope with the public health engineering problems of the city.

At the headquarters of the public health department, Dr. W. H. Peters, health commissioner, and his bureau chiefs will conduct delegates through the many departments for observations and give them any administrative information sought.

Cincinnati under the direction of its local chairman, Dr. W. H. Peters, is anticipating the return of the A.P.H.A. It is prepared to meet the interests of the varied groups that will go there in October—those who seek information in the administration of public health and welfare; those who would spice hours of conference with recreation.

LETTER TO THE EDITOR

TO THE EDITOR:

I was interested in the editorial "The Venereal Disease Problem" in the April, 1927, number of the AMERICAN JOURNAL OF PUBLIC HEALTH. First of all, do not consider me to be an enthusiast on account of my connection with venereal disease work. I must say, however, that all of us who have been working in public health in any capacity know how meager

are the reports as to syphilis. I believe that they are so misleading at present as not to be worth a picayune. I wonder how many repetitions there have been in reports of cases of syphilis where they have depended entirely upon the Wassermann test. One doctor reports it this year, next year another doctor reports it. I am not an authority on the reporting of this disease but it appears to me that there is such a lack of uniformity as to make the system of no value whatsoever. I feel that it is unfortunate that the Public Health Service should put out statistics that are so misleading. So far as measles are concerned all of us know that the number of cases reported is no criterion of the incidence of the disease. I hate to say what percentage of measles I believe is reported. I doubt very much whether measles is nearly so well reported as is syphilis. I question the statement, "There is little doubt that measles is better reported than syphilis."

My belief is that what has been accomplished in the reduction of syphilis is due to the fact that lesions of syphilis are much more quickly sterilized now than formerly. Provided a patient is kept fairly well treated for several years, he should pass through the dangerously transmissible stages of syphilis without actually transmitting it. Formerly that did not prevail and the very way in which the patient contracted his disease was sufficient reason for his transmitting it to others.

It is unfortunate that no method has been devised for the civilian population to make use of what would stop the incubation of a disease that has already been contracted. I have reference to chemical prophylaxis after exposure to venereal disease. As health officers, we do not hesitate to shoot a patient full of arsenic to sterilize him quickly. Yet we do hesitate to use calomel ointment to stop the incubation of the disease within several hours after it has been contracted.

Sincerely yours,

EDGAR S. EVERHART, M.D.
Chief, Venereal Disease Division
Pennsylvania Department of Health,
Harrisburg, Pa. April 23, 1927.

NEW MEMBERS

Charles F. Adams, B.S.A., A.M., M.D., Indianapolis, Ind., Director State Laboratory

Mark Anthony Cooper, A.B., Trion, Ga., in charge Dairy, Trion Farms

Edwin H. Coward, M.D., Pleasantville, N. J., New Jersey State Health Department

T. O. Crawford, M.D., Dewey, Okla., City Superintendent of Health

Cora B. Cripe, B.S., Nashville, Tenn., Assistant Professor Nursing Education, Peabody College

Alfred A. Demaria, M.D., Boston, Mass., Surgeon, Chilean Public Health Service

Elsie Druggan, Athens, O., Director Health Department, Ohio University Hospital

William H. Enneis, M.D., Madison, W. Va., County Health Officer

George B. Faries, M.D., Meadville, Pa., Crawford County Medical Director

Edmund B. Fitz-Gerald, M.D., Wollaston, Mass., Health Commissioner

Catherine M. Forrest, R.N., B.S., Columbus, O., Assistant Professor of Public Health, Medical College, Ohio State University

Edwin G. Franke, B.S. in C.E., Mexia, Tex., City Sanitary Engineer

Elma Graham, Beaver, Pa., Executive Secretary, Beaver County Public Health Association

Wen Wai Huang, B.A., 30 Chittenden Ave., Columbus, O. (Assoc.)

James R. Kaye, M.B., C.M., D.P.H., Wakefield, England, County Medical Officer (Assoc.)

Hugh C. McRee, M.D., Decatur, Ala., County Health Officer

Ruth E. Moor, M.A., Columbus, O. (Assoc.)

Eduardo G. Morales, M.D., Dr.P.H., San Juan, P. R., Epidemiologist, Insular Department of Health

Walter L. Obold, Philadelphia, Pa., Instructor Bacteriology Drexel Institute

Walter H. Peck, Ekalaka, Mont. (Assoc.)

Olivia T. Peterson, R.N., Minneapolis, Minn., Superintendent Public Health Nursing, State Board of Health

Alexander A. Robertson, Quincy, Mass., Sanitary Inspector

David E. Smallhorst, M.D., Glendale, Calif., County Deputy Health Officer

Charles W. Strowger, M.D., Baltimore, Md., Student at School of Hygiene and Public Health, Johns Hopkins University for degree C.P.H.

Edward P. Whistler, M.D., Louisville, Ky., Health Officer

Edward A. Woods, M.A., Pittsburgh, Pa., President, Tuberculosis League of Pittsburgh

BOOKS AND REPORTS

Delusion and Belief—*By Charles Macfie Campbell. Cambridge: Harvard University Press*, 1926. 80 pp. Price, $1.50.

The study of man's beliefs is the study of man's adaptation to his environment. This statement Dr. Charles Macfie Campbell makes in his readable, interesting little book *Delusion and Belief*. Dr. Campbell by the most effective examples brings out how man's simple emotional needs mould his beliefs and how these needs lie at the basis of the beliefs.

The examples of the emotional needs such as bereavement, unsatisfied love, longings of the childless, desire for power, etc., give us most interestingly and most vividly the process of how these beliefs are moulded, and show us, as Dr. Campbell desired to do, how closely akin are the delusions of the abnormal and the beliefs of the normal.

The book is but a brief study but it is full of illuminating, wonderfully varied material. It presents this so delightfully that one gains real insight into how the simple things in life make for happiness, adjustment and, as so aptly put by Dr. Campbell, "the quality in human life."

I would advise every public health nurse to read this book and then to read it again. It will open up to her a new field of thought and is bound to stimulate her to further reading and study upon this most important, even if most difficult, concern of public health at this time, the vast field of mental health.

M. L. DONOHOE

Hospital Law—*By John A. Lapp and Dorothy Ketcham. Milwaukee: Bruce Pub. Co.*, 1926. 557 pp. Price, $8.00.

Just as every sanitarian should have a working knowledge of the fundamental legal principles applicable to public health, so too should every person connected with a hospital in any capacity, be cognizant of the law as concerned with such institutions. The legal phases of hospitals are admirably set forth in this new book, which has been developed in coöperation with the Hospital Library and Service Bureau of the American Conference on Hospital Service. The volume is the only modern, complete work on this subject, dealing with all phases of it, including the legislative, judicial, and administrative aspects.

The 12 chapters are concerned with such specific topics as: hospital definitions, incorporation; liability of private and public hospitals, respectively; taxation; exemption from taxation; public aid; hospitals as nuisances; licensing; organization and administration; charitable trusts; and hospital records. An appendix gives a useful digest of hospital legislation. There is a good index and also a table of the court decisions cited.

Although the authors state that hospital law is still in the making and that this book does not attempt to lay down final principles, but merely to bring together the concurrencies and divergencies of court decisions, many legal principles relative to hospitals are definitely established, at least within the various states, and if nothing more were accomplished than to indicate these trends, the book would be of value.

A tremendous amount of labor has gone into the making of this volume. About 700 court decisions are cited, with many extensive quotations, and legislative provisions germane to hospitals are given for all the states. The sections devoted to statutes will, no doubt, be out of date in a few years, but the adjudications by courts of last resort remain as more or less permanent precedents.

This book is a distinct contribution to legal and sociological literature. It is thorough, comprehensive, and of great value for reference. The function of any reliable textbook on a legal subject is, of course, not only to set forth legal principles as the author sees them, but to point the way for a further and more intensive acquisition of specific knowledge, involving consultation of the original sources, such as the written law, or the common law as expressed by the courts in their decisions. Every hospital should possess a copy of this book and every individual having any connection with such an institution should also be familiar with it.

JAMES A. TOBEY

Maori Symbolism—*Report made by Ettie A. Rout, New Zealand Court Reporter. From the evidence of Hohepa Te Rake, an Arawa Noble, with a preface by Sir William Arbuthnot Lane, Bart., C.B., M.S. New York: Harcourt, Brace & Company, Inc. London: Kegan Paul, Trench, Trubner & Co., Ltd.*, 1926. 322 pp. Price, $6.00.

The object of this book is to preserve some of the World's Sacred Legends in written form, those which in ancient times it would have been a crime to publish, and which have been passed down to certain selected members of the Maori nobility—the Elders, to whom they were carefully taught as a sacred trust and who have passed them down from one generation to another for thousands of years.

While the book is interesting from a number of different standpoints, chiefly historical and anthropological, its interest for the readers of this JOURNAL lies in the fact that the Maori were a wonderful race physically, and regarded the care of the body and its improvement as a sacred duty. Race improvement was taught as one of the highest duties. Self improvement was equally necessary, and every person was required to educate himself mentally, morally and physically through the whole of his life. Sexual selection was taught and practiced, and it was the personal duty of every Maori to maintain the body in perfect health by exercise and diet. Those unable or unwilling to be healthy were unworthy to live; hence malformed infants and permanently disabled warriors were given "The Peaceful Death." Joy was the object of life; everything which increased it was innocent and everything which decreased it was sinful. It is especially interesting to note the importance which they laid upon the care of the bowels which they regarded as the secret of good health.

The author describes them as "the bravest of all travellers, the greatest of all discoverers and the most enduringly successful of all nation-builders." She refutes many of the misstatements made in supposedly authoritative publications in regard to this splendid race, which prospered in every way as long as the natural mode of living was followed, but which has been unable to withstand the ravages of civilization. Landing in New Zealand, 800 strong, two-thirds of whom were men, they increased to a million and a quarter souls before the occupation of New Zealand by Europeans. At present they are rapidly vanishing race.

The author has produced a remarkable piece of work, showing an enormous amount of research, in spite of the fact that she speaks of herself only as a "reporter." Her experience as official New Zealand Law Court Reporter fitted her especially for the task which she has accomplished so well. In an appendix she gives a large number of notes, corroborative of the Maori Legends, and indicating the lines upon which research should be undertaken. The Maori are perfectly clear as to the history of their race from the remotest age. They are Israelites, who have left marks of their migrations in many parts of the world.

The book has a preface by Sir William Arbuthnot Lane, who considers it "one of the most valuable reports ever prepared regarding the natural mode of life of Mankind." It is beautifully printed and contains a number of unusually excellent illustrations.

While somewhat out of the general line of reading which the average medical man seeks, it can be heartily commended to all.

M. P. RAVENEL

Researches on Hookworm in China—*By W. W. Cort, J. B. Grant, N. R. Stoll and other collaborators. The American Journal of Hygiene (Monographic Series), No. 7.* October, 1926.

This 398-page report of the China Hookworm Commission covers the most extensive hookworm investigation ever undertaken in China. The work was done under the joint auspices of the Department of Pathology of Peking Union Medical College, and the Department of Medical Zoölogy of the Johns Hopkins School of Hygiene and Public Health. It was financed by the International Health Board.

Research centers were established in north (Chefoo), central (Soochow and Wuchang), and south (Canton) China. Of 232 replies to a list of questions sent to all parts of the country, 138 were sufficiently explicit to be included in an analysis of the distribution of hookworm infestation and the presence of hookworm disease. This analysis contains a significant hint that the distribution of *A. duodenale* and *N. americanus* may ultimately throw some light on the perplexing problem of Chinese migrations, for according to Darling, *N. americanus* is chiefly of equatorial distribution while *A. duodenale* occurs chiefly to the north of 20° N. latitude.

The members of the commission's staff performed over 6,000 egg counts by the dilution

egg counting method which was found to provide a valid measure of the degree of infestation and of the severity of hookworm disease as revealed by hemoglobin readings. In most hospitals and medical centers in China the smear method is commonly used. This is the simplest and most economical where nothing more than mere positive or negative diagnosis is desired. Infestation was found to be three-fifths *A. duodenale* and two-fifths *N. americanus*. Without regard to species, the average output per day per female was found to be close to 20,000 eggs.

The commission confirmed the view that conditions in north China are not favorable to the spread of hookworm infestation. In central and south China the infestation and the disease have a wide distribution. But there are only a comparatively few areas where the disease is one of the major public health problems. This surprisingly localized distribution is due to a great variation in the degree to which the use of nightsoil on different crops spreads hookworm infestation.

In Chefoo an incidence of about 35 per cent was found. Here, as elsewhere, the farmers stood out as the worm burdened group. In the Wuchang center 48 per cent were hookworm positive. Among women, foot-binding is still practiced in this region. Only 5.5 per cent of 563 women examined were hookworm positive.

Foot binding is not common in south China. Here the women go barefooted into the mulberry groves to pick leaves for the silkworms. They showed a high infestation as compared with males in a series of 1,000 egg counts. There was no significant evidence that either miscellaneous soil pollution or soil contamination from the handling of feces were important sources of infestation. In south China, as elsewhere, it was noted that the cultivation of rice crops was not an important source of infestation. But the cultivation of vegetables, fruit trees, sugar cane and particularly mulberry groves were sources of infestation. The methods of application of nightsoil before the second picking of the mulberry leaves, and the procedure of the people at this picking were well adapted to the spread of hookworm infestation.

Regarding the viability of hookworm eggs stored in nightsoil, the presence of *apparently* good eggs is not a criterion for judging their viability in stored nightsoil. As yet there is no microscopic method to differentiate between viable and non-viable eggs. Nightsoil, heavily infested with eggs and diluted with an equal amount of water becomes at least 90 per cent sterile in one month in Canton. Nightsoil to which 25 per cent of ammonium sulphate, or Chili nitrate, or stone lime, or ashes was added, became practically sterile within one week of storage, with a strong probability of sterility occurring within one day.

The commission was forced to the conclusion that in most parts of China, hookworm disease is a problem of only secondary public health importance as compared with a considerable number of other diseases.

Since no great danger from hookworm disease attends the use of nightsoil on such crops as cotton, rice, etc., and since there is not a sufficient amount of nightsoil available for all uses, one suggestion for control is the substitution of other fertilizers for the mulberry groves where infestation is highest. Another method of control is storage for three months to decrease the viable eggs to a minimum. Mixing in other fertilizers with nightsoil during storage hastens the process of making the product safe. In some regions the people already associate ground-itch with mulberry cultivation. It is suggested that a program of educating the people regarding the cause of hookworm and the conditions under which the disease is spread might be undertaken.

The hookworm problem in China centers around the economic necessity of using nightsoil for fertilizer. The farmer can buy 1,000 pounds of nightsoil for what 8 pounds of fertilizer would cost. The Chinese farmer of to-day is still influenced by agricultural rites explicitly formulated for him a thousand years before the Christian era. W. W. PETER

Rheumatism, Its Meaning and Its Menace—*By Lewellys F. Barker, M.D., and Norman B. Cole, M.D. New York: D. Appleton & Co.*, 1926. 166 pp. Price, $1.50.

The chief value of this book, which according to the preface was written for the public, rests in the fact that it tells what rheumatism is, gives its various manifestations, and points out that it is the chief source of heart trouble in children and adolescents. The part the tonsils play as portals of entry for infection is emphasized. It has been estimated that as many as 167,000 cases of rheumatism have occurred in this country in a single year, and of these no less than 40 per cent developed chronic heart disease. From the standpoint of our readers,

the book is particularly valuable on account of the possibilities of prevention and the clear demonstration of the great amount of good which can be done in this direction.

We fear that the authors have not succeeded in writing a popular book. Too much attention is given to names which the authors rightly characterize as "jaw-breakers." There seems to be no good reason for the average laymen to have a number of pages on nomenclature, and discussions concerning certain names which may mean "the arthritis deformans of McCrae," or "the hypertrophic arthritis of Goldthwait," or "the proliferative arthritis of Nichols and Richardson." Further, as on page 112, *et seq.*, there is much advice which is clearly intended for physicians and is apt to disquiet the average lay reader. In speaking of drugs for the relief of chronic arthritis we find a discussion of the salicylates and the use of morphine and pyramidon. Just why the public should be informed about these is not clear.

The book ends with a glossary which does not, however, give many of the strictly technical, and more or less unusual, terms which are found in the text, such as paranasal, arthrolysis, arthrodesis, etc. The book seems to us to be more adapted to physicians than to laymen, though it contains much useful information for the public. *Blood Pressure*, by the same authors, was a successful attempt to give the facts concerning a puzzling question in terms that the public could understand. The reviewer took up the present book with the feeling that the same thing would be accomplished for rheumatism, but has been disappointed.

The book is well printed and bound and is very free from errors. M. P. RAVENEL

Biological Relations of Optically Isomeric Substances—*By Arthur R. Cushny. Baltimore: Williams & Wilkins*, 1926. x+80 pp. Price, $2.00.

The third memorial lecture on the Charles E. Dohme Foundation at Johns Hopkins University School of Medicine is contained in this brochure by the late Professor Cushny. A deep interest attaches to the relations of optically active substances to the phenomena of life, in part because of the dramatic part they played in the scientific career of Pasteur and of the significance he attached to their behavior. Biologists have, however, been slow to follow up this relationship, doubtless because of their lack of a mode of attack. Pharmacology, however, offers a peculiarly fertile field for experiment, since many drugs belong to substances used in the treatment of disease are racemic, or one or the other member, or both, of an isomeric pair. The author summarizes the evidence for the essential similarity of the reactions of such substances alike to known chemical substances, to enzymes, and to living tissues. In the specific activity of a drug, such, for example, as hyoscyamine, 3 factors operate, (1) the general structure of the molecule, (2) the presence of alcoholic hydroxyl in the side chain of the acid, which intensifies the activity to a pronounced extent, and (3) the presence of the asymmetric carbon which gives optical rotation to the molecule and may vary its activity about 15 to 20 times, according to direction of that rotation. There is, however, no constant relation between the direction and the increase in activity. The analysis of the reactions of enzymes and substrates, of receptors and drugs, far from clarifying the relations of living matter to chemical constitution, indicates that more factors are involved than are generally recognized. Very slight changes in chemical structure may alter enormously the reaction. No crude rules govern the relations of chemistry and therapeutics. The reaction is definite when the necessary configuration is present in the cell or tissue, but such a configuration may be very limited.

Pharmacological investigation is a method of applying a qualitative test for the presence of such configuration or certain chemical groupings in living matter. CHARLES A. KOFOID

Inaugural Number of the "Bulletin"—*Harvard Medical School Alumni Association*, March, 1927. 30 pp.

The object of the Bulletin is to give fresh contact between the graduates and the medical school.

This number carries a welcoming note from the president of the University, an explanatory letter from the president of the association, an article on the new medical school dormitory with three photographs showing it partly constructed, an article on the school of industrial hygiene by Dr. F. C. Shattuck, a history of the department of physiology by Dr. Walter C. Cannon, a financial accounting, a report of scholarships, loans and appointments, and alumni notes.

If the wisdom of the alumni can be voiced by this bulletin it is conceivable much benefit may result to public health. A. B. E.

Les differentes formes de l'Arsenicisme et en particulier de l'Arsenicisme provenant de l'habitation on des objects domestiques—*P. Karl Petreu. Masson et Cie, Editeurs. Libraires de l'Academie de Medecin, 120 Boul. St. Germain, Paris,* 1926. 128 pp. Price, $.48.

As a result of a "psychic epidemic" of arsenicalism, the Swedish Government appointed a commission to study the entire question of chronic arsenic poisoning with especial reference to the possibility of such poisoning from wall papers, paintings, etc., in the home.

In a study of the cases reported it is noted that: The morbid symptoms may often be manifest in the course of 3 months following the beginning of exposure, and in many cases at least, within 6 months. The majority are manifest within 1 year. Usually symptoms disappear within 6 months, or at most 1 year after termination of exposure to a known arsenical source—this time is shorter in the non-doubtful cases than in the doubtful.

Oil paintings are considered as the source of poisoning in 70 per cent of the doubtful groups, but only 18 per cent of the positive cases. Wall papers and paints are incriminated in 20 per cent of the doubtful cases and 73 per cent of the positives.

The burden of proof in the reports as received is not sufficient to say that individuals contract arsenic poisoning from oil paints or paper containing arsenical pigment.

The final conclusions of the report are that it is possible to develop chronic arsenic poisoning from exposure to domestic objects such as painted walls and wall papers, etc., though many of the reported cases were purely psychic.

The report is an excellent summary and discussion of the available literature of arsenic poisoning, and of the experimental work of the members of the commission, as well as an exhaustive critical review of the evidence obtained from their questionnaire.

HENRY FIELD SMYTH

Pan American Health Office—The Health Office of the Pan American Union in Washington presented as the main article of their April Bulletin a complete translation into Spanish of the *Report of the Committee on Standard Regulations for the Control of Communicable Diseases* of the American Public Health Association.

This is a revision of the report which first appeared in *Public Health Reports,* October 12, 1917, which was published as *Public Health Bulletin* of December 17, 1926, and in the AMERICAN JOURNAL OF PUBLIC HEALTH for March, 1927. It is now issued in vest pocket edition by the American Public Health Association. The bulletin also presented to South American readers a Spanish résumé of the annual report of the Surgeon General of the U. S. Public Health Service for the year ending June 30, 1926.—*Boletin de la Officina Sanitaria Panamericana,* Abril de 1927.

The Mother and Unborn Child—*A Little Book of Information and Advice for the Prospective Mother—By Samuel Raynor Meaker, Associate Professor of Gynecology, Boston University School of Medicine. Baltimore: Williams and Wilkins,* 1927. 198 pp. Price, $2.50.

This excellent little book strikes a happy medium, in being neither too elementary nor too technical. It ought easily to hold its own among the many useful prenatal guide books now available. It has the advantage of presenting some important points not included in the others. The outline with illustrations of abdominal exercises for the lying-in mother is most acceptable and something for which we have vainly searched.

Cod liver oil and sunshine treatments for pregnant mothers and young babies are not mentioned, whether purposely or because the author may feel it unnecessary is not obvious. Sticking to the old-fashioned advice to modern mothers to wear high necked, long sleeved, long legged, woolen underwear during pregnancy in cold weather is, of course, quaint in these days of few and brief clothes. It is, besides, really impractical for our large number of city mothers living in overheated houses. The diet suggestions are most sensible and not too extensive, and the chapter on nursing and care of the baby are full of helpful suggestions.

Breast feeding is duly emphasized but the use of the breast pump in deficiency of breast milk and the reference made (presumably) to the more modern method of emptying the breast by manual expression as a "special sort of massage," are perhaps unfortunate. Those having the best success with manual expression are particularly anxious to avoid suggesting the breast pump and breast massage to mothers, as they feel that these things should be religiously avoided.

This little book is pleasingly gotten up by the Waverly Press. SUSAN M. COFFIN

The **Legibility of Print**—*By R. L. Pyke, M.D. Privy Council, Medical Research Council. London: His Majesty's Stationery Office,* 1926. 123 pp. Price, 4s.

As the result of the work of a committee in 1922 to select the best faces of type and modes of display for government printing, the Medical Research Council of Great Britain appointed a committee upon legibility of type. This report gives an account of original experimentation by R. L. Pyke in the Psychological Laboratory, University of Cambridge, and also an excellent review of the problem and some discussion of research done to date.

When we consider the tremendous volume of printed material now being produced throughout the world and the possibilities of eye strain due to improper print standards, we are astounded at the lack of scientific basis determining the legibility of print. This publication emphasizes the effect of tradition, decorative effect and mechanical excellence as handicaps to any typographical reform. The investigators point out also that the experimental methods now available are not likely to provide clear and direct answers to the many unsolved practical problems, and that the whole subject can more profitably be approached by subordinating it as part of a more general and comprehensive scheme of research into the physiology of vision. The failure of present methods of school eye examinations in the selection of many cases needing attention is only one of the problems associated with that of legibility of print that needs further investigation.

The annotated bibliography of 50 pages in this pamphlet arranged according to historical subject-résumés will be invaluable for future research. The judgment of the authors on the various topics has been briefly but carefully summarized as well as the experimental tests and the criteria used. An appendix, always of invaluable assistance, is included.

BOOKS RECEIVED

COMPEND OF PHYSIOLOGY (16th ed.). By Albert P. Brubaker, M.D. Philadelphia: Blakiston, 1927. 281 pp. Price, $2.00.

SOCIAL FACTORS IN MEDICAL PROGRESS. By Bernhard J. Stern, Ph.D. New York: Columbia Univ. Press, 1927. 136 pp. Price, $2.25.

THE PROBLEMS OF CHILDHOOD. By Angelo Patri. New York: Appleton, 1926. 309 pp. Price, $2.00.

YOUR HAIR AND YOUR HEALTH. By Oscar L. Levin, M.D. New York: Greenburg, 1926. 163 pp. Price, $2.00.

THE CARE OF THE FACE. By Oscar L. Levin, M.D. New York: Greenburg, 1927. 225 pp. Price, $2.00.

THE MEDICAL DEPARTMENT OF THE ARMY. By James A. Tobey. Baltimore: Johns Hopkins Press, 1927. 161 pp. Price, $1.50.

THE NORMAL CHEST OF THE ADULT AND THE CHILD. By J. A. Myers. Baltimore: Williams & Wilkins, 1927. 419 pp. Price, $5.00.

PROCEEDINGS OF THE CONFERENCE OF STATE AND PROVINCIAL HEALTH AUTHORITIES OF NORTH AMERICA. 1926. Atlantic City, N. J., May 17–22, 1926. American Health Congress Series, Vol. III. New York: National Health Council, 1927. 236 pp.

A SYNOPSIS OF HYGIENE. (2d ed.) Specially Intended for Those Studying for a Diploma in Public Health. By W. Wilson Jameson, M.A., and F. T. Marchant, M.R., San. Inst. London: J. & A. Churchill, 1927. 514 pp. Price, $5.00.

EMPLOYMENT PSYCHOLOGY. By Harold E. Burtt. New York: Houghton Mifflin, 1926. 563 pp. Price, $4.00.

AIDS TO SANITARY SCIENCE AND LAW. By C. F. White, D.P.H. New York: Wood, 1927. 316 pp. Price, $1.50.

MEDICAL CARE FOR A MILLION PEOPLE. A Report on Clinics in New York City and of the Six-Years' Work of the Committee on Dispensary Development of the United Hospital Fund, 1920–1926. The Committee on Dispensary Development, 151 Fifth Ave., New York City, 1927. 90 pp.

INTRODUCTION TO THE HISTORY OF SCIENCE. Vol. 1. By George Sarton. Baltimore: Williams & Wilkins, 1927. 839 pp. Price, $10.00.

THE MODERN HEALTH BOOKS. Child Health and Character, by Elizabeth M. Sloan Chesser, M.D. 204 pp. Nerves: Master-System of the Body, by David Fraser-Harris, M.D. 222 pp. The Teeth and Health, by J. Sim Wallace, M.D. 214 pp. London: Faber & Gwyer, 1927. Price, $1.00 per copy.

GUIDANCE OF CHILDHOOD AND YOUTH—READINGS IN CHILD STUDY. Edited by Benj. C. Gruenberg. New York: Macmillan, 1927. 324 pp. Price, $1.50.

THE NEW MEDICAL FOLLIES. By Morris Fishbein, M.D. New York: Boni & Liveright, 1927. 235 pp. Price, $2.00.

THE HUMAN BODY. By Trevor Heaton, M.D. New York: Dutton, 1927. 250 pp. Price, $3.00.

THE WOMAN A MAN MARRIES. By Victor Cox Pedersen, M.D. New York: Doran, 1927. 276 pp. Price, $3.00.

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MANUAL OF PSYCHIATRY. (6th ed.) By Aaron J. Rosanoff, M.D. New York: Wiley, 1927. 697 pp. Price, $6.00.

HYGIENE AND SANITATION FOR NURSES. (5th ed.) By George M. Price, M.D. Philadelphia: Lea & Febiger, 1927. 286 pp. Price, $2.25.

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MANUAL OF BACTERIOLOGY. (8th ed.) By Robert Muir, M.D., and the late James Ritchie, M.D. Revised with coöperation of Carl H. Browning, M.D., and Thomas J. Mackie, M.D. New York: Oxford, 1927. 821 pp. Price, $4.75.

HEALTH BEHAVIOR. A Manual of Graded Standards of Habits, Attitudes and Knowledge Conducive to Health of the Physical Organism and of Personality, Home, Community and Race. By Thomas D. Wood and Marion Olive Lerrigo. Bloomington, Illinois: Public School Pub. Co., 1927. 150 pp. Price, $2.00.

HEALTH DEPARTMENT AND OTHER REPORTS

IRA V. HISCOCK

Colorado Springs—A most attractive annual report for 1926 has been published recently by the Department of Public Health and Sanitation of Colorado Springs. Bound in heavy grey covers and printed in readable type on glazed paper, this 38-page report contains an interesting account of present health conditions in this city with suggested improvements by the health officer, together with 10 pages of statistical data and numerous pictures.

A decided improvement in the city's milk supply in 1926 over that of 1925, as evidenced principally by the reduction in the number of bacteria found upon laboratory examination, is noteworthy. In 1925 the average number of bacteria per c.c. was 144,000, while the average of all dairies for 1926 was 52,000, only 1 of 29 dairies reporting a count above 100,000.

Five cases of typhoid fever, the lowest number since records have been kept in the department, were recorded for 1926, and only 1 of these was of local infection. After a 3½-year period of freedom from smallpox, the disease appeared again in 1926, when 12 cases, all of them mild, were cared for.

The health department expenditures for the year totaled $25,738.95, making a per capita cost of $.71½ in this city of 36,000 estimated population. Colorado Springs reports a birth rate of 17.94 per 1,000 population; a death rate of 16.42 (exclusive of stillbirths), corrected for residence 12.78; and an infant mortality rate of 60.37 per 1,000 live births. Interesting tables listing deaths by cause, communicable diseases reported for 20 years, per cent butter fat in milk and cream from various dairies, and a yearly report of meteorological observations conclude the report.

Clinton, Massachusetts—The annual report of the Public Health Department of the town of Clinton, Mass., has been published for the year ending December 31, 1926. The report of the chairman of the Board of Health on the general health conditions of the city, with recommendations for future improvements of these conditions, is followed by brief reports from the different departments, and a number of tables listing deaths by causes, sex, age, color, etc.

This community of approximately 13,000 inhabitants reports a birth rate of 24.95 per 1,000 population, a death rate of 11.79 (nonresidents excluded), and an infant mortality rate of 83.33. An appropriation of $15,000 is allowed the department. Of this amount, the expenditures for 1926 total $13,900.97, making the per capita cost $1.07.

Harrison County Health Department—The Harrison County Health Department of Clarksburg, W. Va., has submitted its third annual report for the year ending December 31, 1926. Opposite several of the 12 mimeographed pages appear excellent camera photographs of classes in "baby care," "home nursing," a preschool clinic, etc. This county of 418 square miles has a population of approximately 45,000 (excluding the city of Clarksburg), of which about 2,500 are colored and from 1,500 to 2,000 Spanish. The year 1926 has been marked by an increase in communicable disease; there being a severe epidemic of measles and whooping cough during this time. All milk cows in the county have been tuberculin tested and the reactors removed from herds, and Harrison County will soon be admitted to the "accredited area" of the United States.

One hundred and twelve little mother's league classes were conducted throughout the summer and fall, with a total attendance of 1,228 children of from 8 to 14 years of age from the 4th, 5th and 6th grades. The object of this course is "to teach girls how to care for babies and small children intelligently and according to the modern and scientific methods, thereby checking infant mortality." Ninety-four home nursing classes were held during the year with a total attendance of 1,141 girls from the 7th and 8th grades and high school. In addition to these classes, 16 preschool child health conferences were held during the summer months, at which 204 babies were given thorough examinations, and advice as to care and diet given the mothers. The office of the County Health Department also conducts a motherhood correspondence course, sending out pamphlets and a series of 5 prenatal letters of instructions for pregnant women, together with a birth registration blank and 2 ampoules of silver nitrate solution accompanying the last letter. Health programs are being organized in many schools throughout the county, in some of the larger schools moving pictures are exhibited and talks on oral hygiene given by a representative of the Colgate Company.

Wyoming, 1925–1926—One of the outstanding features of public health in the state of Wyoming during the biennial period 1925 and 1926 is the increased coöperation by physicians, hospital and school authorities in reporting communicable diseases and other vital statistics. "For the first time in the history of the state, it may now be said that every physician is reporting the births attended by him." An increased incidence of scarlet fever for the 2 years has been noted, 392 cases having been reported in 1925, and 747 during 11 months of 1926. The majority of other childhood diseases have taken a downward trend during this period.

A goiter survey of public school children above the 4th grade through high school was made during the spring of 1926 by the state health officer. Of the 5,970 pupils examined, an average of 19.7 per cent were found to have enlarged thyroid.

The last half of the 39-page report is devoted to statistical data and to a chart illustrating the principal causes of death each year from 1923 through 11 months of 1926. The crude death rate of Wyoming is much lower than the average for the United States as a whole. For 1925, the state reports a birth rate of 21.3, a death rate of 8.4 and an infant mortality rate of 71.1. For the 11 months of 1926 we note a birth rate of 17.04, a death rate of 7.59 and an infant mortality rate of 82.4. The report concludes with a detailed financial statement and a list of county and local health officers and deputies.

Palo Alto, California—The report of the department of health of Palo Alto for the calendar year 1926 is printed on cream colored paper and contains much valuable information in 20 pages of text and tabular material. At the beginning appears a picture of the Palo Alto tree from which the city derives its name, and on the following page are several "glimpses" of Palo Alto which add to the attractiveness of the report.

The year 1926 marks the completion of 16 years of endeavor on the part of the department as a full-time organization. In this rapidly growing city of 11,200 people, a low actual death rate of 8.7 and an infant mortality rate of 29.6 are noteworthy, while the actual birth rate is 15.1. The death rates per 1,000 population from all causes and from preventable causes in Palo Alto and California are compared by means of graphs, and it is interesting to note that for a number of years the death rate from preventable causes in the city has been less than half the rate for the state.

"No diphtheria in 1930" is the slogan adopted by a number of health departments, but Palo Alto almost attained this goal in 1926 when there were but 2 cases of diphtheria, one in an adult university student, and the other in a child who contracted the disease in a neighboring city. To an active campaign of immunization and the careful supervision of cases and possible carriers, the elimination of this disease may be attributed.

The financial statement which concludes the report states that an appropriation of $11,675.00, or $1.04 per capita, is allowed the health department for the fiscal year of July 1, 1926, to June 30, 1927. R. E. W.

Porto Rico—Public health in Porto Rico is both old and new. As far back as 1768 a provincial board of health was organized. Only 7 years after Jenner's great discovery, this board vaccinated in the year 1803 in 23 days a total of 1,570 persons and averted an epidemic according to a report in the *Health Review* of December, 1926, outlining the Development of the Public Health Organization of Porto Rico. The evolution of the modern health organization of the island from its reconstruction in 1899 through the stages of "alleviation of disease," "suppression of disease," "prevention of disease," and "promotion of health," up to the full present program is interestingly outlined. It is worthy of note that the thoroughness of the vaccination program has given Porto Rico an enviable record in smallpox prevention. (Porto Rico *Health Review*, Dec., 1926.)

Institutes for rural teachers were formed in Porto Rico in 1926 for dissemination of knowledge regarding public health and agricultural problems. The island was divided into 12 centers with approximately 200 teachers in each division. An institute of one week was staged in each center, most prominent in the health part of the program being the publicity on Control of Hookworm Disease. Always the object was to show visibly by demonstration rather than audibly by lecture the main facts in control of this scourge. Short introductory remarks directed attention to the relation between the Department of Health and the Department of Public Instruction, following which the teachers were divided into sections for field and laboratory study alternately. Laboratory dis-

plays showed by chart, poster, placard and microscope the zoölogical facts, while field inspections pointed out the application of these factors to soil pollution, the necessity for use of latrines and the good and bad features of latrines visited. Cause, cure, contraction, symptoms, gravity, and prevention of hookworm disease were thus covered. Emphasis was laid on simplicity of presentation, and principles of value to workers in public health education came to light as a result of this experiment, which will well bear reading. (Porto Rico *Health Review*, Jan., 1927.)

Nevada—An interesting biennial report of 15 pages for the period ending December 31, 1926, has been presented by the State Board of Health of Nevada. The recent occurrence of diphtheria in Reno, Sparks and McGill is the occasion for reference to several problems of special significance to this state. It is stated that Nevada's children are more susceptible to diphtheria and some other communicable diseases than are those of most other states; that as travel through Nevada increases, a greater number of cases of communicable disease will be introduced, thereby necessitating vigilance of competent health officials and coöperation of the public; and that diphtheria, like smallpox and typhoid fever, may be largely prevented by immunization measures.

A revised statement of the *International Classification of Causes of Death* for 1925 and 1926 is utilized, together with other tables showing births according to sex, color and nativity of parents, and deaths according to age, sex, color, nativity and social status for 1925 and 1926. The report concludes with a chart pointing out the number of cases of communicable diseases reported by the local health officers in the various counties, and a list of marriage licenses issued during the past two years in each of the 17 counties of Nevada. R. E. W.

Province of Nova Scotia—The Report of the Provincial Health Officer and Deputy Registrar General of the Province of Nova Scotia gives an excellent formal report of work and conditions there. This report covers the year ending September 30, 1926, and occupies the first half of the 75-page issue. Among the items especially emphasized are attainment of the lowest infant mortality rate on record in the province, 67.5 per 1,000 live births, freedom from any unusually serious epidemic except influenza, and concentration of effort on the tuberculosis program. The work of the regular divisions of the department receives special attention, followed by 15 statistical tables.

L'Académie Royale de Médecine de Belgique, Ve Série, Tome VII. No. 1. Séance du 29 janvier 1927—This issue of the bulletin of the Royal Academy of Belgium is devoted to proceedings of the session of January 29, 1927. Proceedings of closed and open sessions, correspondence, reports, discussions and lectures are reproduced. The main address, delivered by M. P. Nolf, is a eulogy of the great ophthalmologist, Jean-Pierre Nuel, emphasizing his contributions to the embryology, normal and pathological anatomy, physiology, experimental pathology and chemical aspects of the eye. Researches of Bremer and Ley on the physiology of the cerebellum of the pigeon are also published.

Mouvement Sanitaire, Feb. 28, 1927—The headline article of this issue, "A Propros des Statistiques Sanitaires," by Dr. G. Forestier, cautions against either over-emphasis or underappreciation of health statistics and urges fuller recognition of the true value of good figures, well interpreted, in their use for education and propaganda, for the evaluation of work accomplished, and for guidance in selection of problems to be attacked and methods to be used. He emphasizes the fundamental necessity of periodic, standard report sheets by every local departmental and municipal office in order to make accurate, national statistics available.

An extract from Professor Panisset, of l'Ecole d'Alfort, "Sur L'Épidémiologie de la Diphtérie," calls attention to four investigations which have resulted in isolation of the diphtheria bacillus from the pus or lesions of horses. This fact, together with the knowledge that the disease occurs in armies most frequently among cavalry troops, suggests to him the importance of investigation of epidemiological relations of horses to diphtheria.

A report by A. Bouffanais of researches on the origin and identification of *B. paratyphosus B.* in meats urges the importance of an adjacent bacteriological laboratory for all large slaughter houses and recommends the use of the agglutination test applied to serum of whole animals in determination of an infection likely to cause intestinal intoxication in man.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Rheumatic **Fever Death Rates**—Despite numerous statistical inaccuracies, the author believes that the declining death rates from acute rheumatic fever indicate the true conditions. The curve of rheumatic fever corresponds with that of the streptococcal infections such as scarlet fever, chorea, erysipelas, septicemia, and puerperal fever

ATWATER, R. M. Studies in the Epidemiology of Acute Rheumatic Fever and Related Diseases in the United States, Based on Mortality Statistics. Am. J. Hyg., 7:3 (May), 1927.

Industrial **Hazard of Benzol**—A record of a study of the effects of certain homologues of benzol upon animals. At concentrations ordinarily possible in industry, toluol, xylol, and tri-flash naphtha were found less toxic than benzol. The use of these substances in place of benzol in industrial processes is indicated.

BATCHELOR, J. J. The Relative Toxicity of Benzol and Its Higher Homologues. Am. J. Hyg., 7:3 (May), 1927.

Metabolism and Infection—A brief review of some of the literature indicating the rôle of nutrition and glandular function in producing immunity to infection, and the influence of infection upon metabolism.

BERMAN, L. The Metabolic Aspects of Infectious Diseases. M. J. & Record, 125:9 (May 4), 1927.

Dietary **Habits**—This paper furnishes evidence that dietary habits, such as eating too fast, too much, too little, and the habitual use of physics, may result in malabsorption and be instrumental in producing deficiency diseases. Recognition of digestive defects may be helped by fecal examination.

BURNETT, F. L., and HOWE, P. R. Malabsorption in Deficiency Diseases. J. A. M. A., 88:22 (May 28), 1927.

Swimming Pool Sanitation—The standards of sanitation adopted for Detroit's swimming pools are described, and the supervisory program is outlined. An interesting story of an apparently effective public service.

CARY, W. H. Practical Swimming Pool Sanitation Control. Nation's Health, 9:5 (May), 1927.

Industrial **Hygiene**—An interesting account of industrial hazards and welfare work in British cotton factories is preceded by a discussion of employment examinations for youthful applicants. The statement is made: "The fear that a medical test might interfere with employment is quite sufficient to prevent these Unions sanctioning the examinations, *so that so far as adults are concerned the proposition may be regarded as unworkable.*" The italics are ours.

DEARDEN, W. F. Medical Examinations and Welfare Work in Cotton Factories. J. State Med., 35:5 (May), 1927.

Heart Disease Prevention—Heart disease prevention is a complex problem, involving the consideration of rheumatic fever, syphilis, and disability through aging. Rheumatic fever prevention through removal of focal infections still is to be proved; syphilis is in a better position. Chronic heart disease is alarming, but not malign. The need for sound research is stressed.

COHN, A. E. Heart Disease from the Standpoint of Public Health. Am. Heart J., 2:4 (Apr.), 1927.

Care of Lepers—An interesting story of the status of leprosy in the modern world, and the plans for the segregation and treatment of the lepers in continental U. S. A. Of the estimated 1,200 in existence, about 425 can be cared for at the national Leprosarium at Carville.

DENNY, O. E. Social Aspects of Leprosy and Leper Treatment. Nation's Health, 9:5 (May), 1927.

Birth Control—A brief history of the birth control movement precedes a plea for medical interest. The legal status of medical advice upon contraceptive measures in the several states is given.

DICKINSON, R. L. The Birth Control Movement. M. J. & Record, 125:10 (May 18), 1927.

Tuberculosis Control—The effect of urban life, industrial conditions, and economic and nutritional influences upon the tuberculosis rate is discussed. In addition, the treatment, after care, and prevention of tuberculosis are considered. Nothing radically new is offered.

DIXON, G. B. Some Aspects of the Tuberculosis Problem in an Industrial City. J. State Med., 35:5 (May), 1927.

Death Curves—An analytical study of the principal causes of death indicated the superiority of using life tables rather than the crude population as the basis for computation. The eight principal causes of death produce a curve similar in conformation to the curve from all causes. An appendix illustrating the statistical method employed adds to the value of the dissertation.

DUBLIN, L. I., *et al.* The Components of Death Curves. Am. J. Hyg., 7:3 (May), 1927.

Thermophiles in Milk—Cultures isolated from 450 samples of pasteurized and raw milk in Baltimore revealed numbers of thermophilic and thermo-tolerant organisms which survive pasteurization and cause pin-point colonies.

ECKFORD, M. O. Thermophilic Bacteria in Milk. Am. J. Hyg., 7:3 (May), 1927.

Pin-Point Colonies—Shall pin-point colonies, caused by bacteria which withstand pasteurization, be ignored in making counts of milk samples? Some authors say, yes; others suggest using media upon which such organisms cannot grow. The author believes that bacteria

in milk, whether producing pin points or regular colonies, are an indication of unsatisfactory conditions.

FAY, A. C. Thermo-Tolerant Organisms as a Cause of So-Called Pin-Point Colonies. J. Bact., 13:5 (May), 1927.

Water Filtration—A description is given of the Denver water filtration plant which involves several unique features, occasioned by the presence of an unusual flora and fauna in the water used. The result gives a lower operating cost than usual.

FUERTES, J. H. The Denver Filter Plant. J. Am. Water Works A., 17:5 (May), 1927.

Diphtheria Diagnostic Difficulties—A new organism, *C. ulcerans*, is isolated from cases diagnosed as diphtheria. The germ is closely related to the diphtheria bacillus, but differs in cultural and immunologic characteristics. It seems to be of etiological significance in inflammatory throat conditions. A new difficulty for the pathologist.

GILBERT, RUTH, and STEWART, F. C. Corynebacterium Ulcerans: a Pathogenic Microörganism Resembling *C. Diphtheriae*. J. Lab. & Clin. Med., 12:8 (May), 1927.

Nutrition Program—The growth of the nutrition work of the N.Y.A.I.C.P., from a staff of one in 1906 to eleven in 1927, is interesting. The instruction is now regularly carried out by the nurses, supplemented in special cases only by the nutrition workers. The latter devote much time to group and general education.

GILLET . H. Development of a Nutrition Program. Pub. Health Nurse, 19:5 (May), 1927.

Tomato Juice and Pellagra—The juice from canned tomatoes was found to prevent pellagra when given in sufficient quantities, whereas carrots and turnips did not prevent the disease. It is suggested that a quart of juice be drunk each day.

GOLDBERGER, J., and WHEELER, G. A. A Study of the Pellagra-Preventive Action of the Tomato, Carrot, and Rutabaga Turnip. Pub. Health Rep., 42:19 (May 13), 1927.

Scarlet Fever Case Release—Hemolytic streptococci were isolated over a longer period in severe infections than in the mild type; complications lengthened and serum treatment shortened the time when such cultures were secured. It is suggested that scarlet fever isolation might be based upon cultures rather than upon an arbitrary period.

GORDON, J. E. Hemolytic Streptococci in the Upper Respiratory Tract of Scarlet Fever Convalescents. J. Prev. Med., 1:4 (May), 1927.

Cross Connections—A plea for a sensible attitude toward the elimination of cross connections in water supply—the action in each instance to be based upon economic considerations, degree of pollution of the inferior supply, and possibility of sterilizing the contaminated water.

GORMAN, A. E. Cross Connection Policies. J. Am. Water Works A., 17:5 (May), 1927.

Calcium Metabolism—Ultra-violet light was found to have no influence upon calcium and phosphorus metabolism in dairy cows, as it does in man, goats, chickens, and rats. This is a specific difference, the cow getting its antirachitic vitamin solely from its feed.

HART, E. B., *et al.* The Influence of Ultra-Violet Light upon Calcium and Phosphorus Metabolism in Milking Cows. J. Biol. Chem., 73:1 (May), 1927.

Tuberculosis Preventoriums—The functions and problems of tuberculosis preventoriums are set forth in an interesting way in this account of the management of the preventorium conducted by the Boston Tuberculosis Association.

HAWES, J. B. Preventorium Problems. Boston M. & S. J., 196:20 (May 19), 1927.

Scarlet Fever Isolation—Experience in Norway, where scarlet fever has been prevalent in mild form, indicates that in cities where isolation has been rigorously enforced, the disease is no less prevalent than in other communities where isolation is neglected. It is suggested that health officials should not ignore the disease, lest a return of the virulent type find them unprepared.

HOLST, P. M. Should Scarlet Fever Isolation Be Less Rigorous? J. Prev. Med., 1:4 (Mar.), 1927.

Fish vs. Mosquitoes—A brief account of a disastrous experiment in which an artificial lake was stocked with bass. The bass ate the minnows which had been consuming the mosquito larvae. Anopheles developed, then malaria, then lawsuits. The bass were estimated to have cost $100 each.

LE PRINCE, J. A. Do Fish Control Mosquitoes? Water Works Engineering, 80:9 (Apr. 27), 1927.

Human Milk Vitamins—Pooled breast milk from wet nurses on normal diet was found to be relatively rich in vitamin A, but deficient in vitamin B. The study indicates that mothers may not supply sufficient vitamin B to their infants, and that foodstuffs rich in this material should be supplied early in the child's diet.

MACY, I. G., *et al.* Human Milk Studies: The Quantitative Estimation of Vitamin A and B.

Experimental Goiter—Young rats fed a diet of vitamin deficient carbohydrates without green vegetables, but with plenty of salts (including iodin) developed goiter. If some human goiter develops from similar causes, it is evident that iodin treatment cannot be effective.

McCARRISON, ROBERT. The Experimental Production of a New Type of Goitre Unrelated in Its Origin to Iodine. Lancet, 1:18 (Apr. 30), 1927.

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MOCK, H. E., and MOORE, J. P. The Cardiac Patient in Industry: Chicago Health Association Plans Constructive Program. J. Indust. Hyg., 9:5 (May), 1927.

Iodine in **Water Supplies**—To dose or not to dose (public water supplies with iodine) is the question. Dr. Oleson concludes that it is economically possible, that it will not harm existing goiters, but that it is not proved that it will prevent endemic goiter. Although not condemned as worthless, the general adoption of the procedure is not advised for all municipalities in endemic goiter regions.

OLESEN, ROBERT. Iodization of Public Water Supplies for Prevention of Endemic Goiter. Pub. Health Rep., 42:20 (May 20), 1927.

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PICKARD, R. J. The Pathogenicity of the Small Races of the "Ameba of Dysentery." J. Lab. & Clin. Med., 12:8 (May), 1927.

Sterilization **of the Insane**—One patient of every 12 admitted to the California hospital for the insane is sterilized, usually during the first year. The majority have been discharged. The operation is performed either for therapeutic reasons or because of psychoses dependent upon inheritance.

POPENOE, PAUL. Eugenic Sterilization in California. J. Social Hyg., 13:5 (May), 1927.

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SCHWARTZ, LOUIS. A Résumé, with Comments, of the Available Literature Relating to Posture. Pub. Health Rep., 42:18 (May 6), 1927.

Congenital **Syphilis**—In a review of 3,300 pregnancies in syphilitic women, 60 per cent resulted in miscarriages, stillbirths, neonatal deaths, or live children showing stigmata of infection. Preventive prenatal treatment is stressed. An important paper for officials interested in prenatal and infant hygiene.

SMITH, C. M. One Thousand Cases of Congenital Syphilis. Arch. Dermat. & Syph., 15:5 (May 3), 1927.

Spray Painting Hazards—Mild symptoms of benzol poisoning were found among lacquer sprayers in a Pennsylvania survey. Results of chemical air survey and ventilation tests will be found in a report obtainable from the Pennsylvania Department of Labor.

SMYTH, H. F. Hazards of Spray Coating Processes Investigated. Nation's Health, 9:5 (May), 1927.

The Diet of Eskimos—The Greenland Eskimo, on a carnivorous diet eaten raw, shows no increased tendency to renal disease, and is sufficiently supplied with vitamins to prevent scurvy and rickets. The Labrador Eskimo, living on cooked meat and dried and canned vegetables, is subject to both maladies.

THOMAS, W. A. Health of a Carnivorous Race. J. A. M. A., 88:20 (May 14), 1927.

Preventing Blindness—Of 213 cases of blindness in children examined in a school in England, 80 were caused by venereal disease (preventable), 66 by inherited disease (partially remedial), 57 by non-inherited and non-venereal diseases, and 10 by accident. As the largest percentage is due to ophthalmia and keratitis, the importance of venereal disease control in the prevention of blindness is evident.

THOMPSON, A. H. An Analysis of the Causes of Blindness. Lancet, 1:21 (May 21), 1927.

Health Habits—Numerous examples of the failure to follow two simple but very essential rules of health; viz., cover the cough or sneeze with a handkerchief, and keep fingers, pencils, and other things that do not belong there out of the mouth. Brief and good.

WILLIAMS, E. G. Practicing Health Habits. Am. J. Nursing, 27:5 (May), 1927.

KEY TO ABBREVIATIONS OF PUBLICATIONS

AM. HEART J.—American Heart Journal. C. V. Mosby Co., 3616 Washington Blvd., St. Louis.

AM. J. HYG.—American Journal of Hygiene. Editor, Dr. Charles E. Simon, 310–312 W. Monument St., Baltimore.

AM. J. NURSING—American Journal of Nursing. 370 Seventh Ave., New York City.

ARCH. DERMAT. & SYPH.—Archives of Dermatology and Syphilology. American Medical Association, 535 N. Dearborn St., Chicago.

BOSTON M. & S. J.—Boston Medical and Surgical Journal. 126 Massachusetts Ave., Boston.

J. A. M. A.—Journal of the American Medical Association, 535 N. Dearborn St., Chicago.

J. AM. WATER WORKS A.—Journal of the American Water Works Association, Mt. Royal and Guilford Aves., Baltimore.

J. BACT.—Journal of Bacteriology. Williams and Wilkins Co., Mt. Royal and Guilford Aves., Baltimore.

J. BIOL. CHEM.—Journal of Biological Chemistry. Rockefeller Institute for Medical Research, 66th St. and Ave. A, New York City.

J. INDUST. HYG.—Journal of Industrial Hygiene and Abstract of Literature. 55 Van Dyke St., Boston.

J. LAB. & CLIN. MED.—Journal of Laboratory and Clinical Medicine. C. V. Mosby Co., 3616 Washington Blvd., St. Louis.

J. PREV. MED.—Journal of Preventive Medicine. John McCormick Institute for Infectious Diseases, 5724 Ellis Ave., Chicago.

J. STATE MED.—Journal of State Medicine. 37 Russell Square, London.

J. SOCIAL HYG.—Journal of Social Hygiene. American Social Hygiene Association, 370 Seventh Ave., New York City.

LANCET—The Lancet. 423 Strand, London.

M. J. & RECORD—Medical Journal and Record. A. R. Elliott Publishing Co., 53 Park Place, New York City.

NATION'S HEALTH—The Nation's Health. The Modern Hospital Publishing Company, 22–24 E. Ontario St., Chicago.

PUB. HEALTH NURSE—The Public Health Nurse. National Organization for Public Health Nursing, 370 Seventh Ave., New York City.

PUB. HEALTH REP.—Public Health Reports. Superintendent of Documents, Government Printing Office, Washington, D. C.

SOUTH. M. J.—Southern Medical Journal. 807 Empire Bldg., Birmingham, Ala.

WATER WORKS ENGINEERING—Case Shepperd. Mann Publishing Corporation, 225 West 34th St., New York.

PUBLIC HEALTH NOTES

STATE AND PROVINCIAL HEALTH AUTHORITIES OF NORTH AMERICA MEET IN WASHINGTON, D. C.

THE Forty-second Annual Meeting of the Conference of State and Provincial Health Authorities of North America held in Washington, D. C., May 14–16, was attended by the executive health officers from 30 states, Hawaii and the Canadian provinces of Alberta, Nova Scotia and Saskatchewan. The following officers were elected:

President—Dr. S. W. Welch, Alabama
Vice-President—Dr. A. C. Jost, Nova Scotia
Secretary-Treasurer (re-elected)—Dr. A. J. Chesley, Minnesota
Field Secretary (re-elected)—Dr. S. J. Crumbine, New York City

There was discussion of the Montreal typhoid situation at a special session, when the following was recorded:

> RESOLVED by the Conference of State and Provincial Health Authorities of North America, taking cognizance of the alarming epidemic of typhoid fever in Montreal which has continued so long as to indicate ineffective public health measures for its prevention, that organizations contemplating sessions in Montreal and tourists expecting to visit that city are advised that they should be inoculated against typhoid fever, if considering the danger involved, it is still absolutely necessary to include Montreal in their itineraries.

At another special session a resolution regarding the flood situation was passed. It provided that a committee wait upon General Lord to petition the President through him to authorize by executive order the use of the Epidemic Fund in the flood area. This committee, consisting of the President, Dr. S. W. Welch, Dr. Arthur McCormack, Dr. T. B. Appel, Dr. Stanley Osborn, Dr. E. L. Bishop and Dr. A. J. Chesley, conferred with General Lord Saturday morning, May 21. General Lord endorsed the petition of the committee and arranged immediately for a conference with Surgeon-General Cumming for the purpose of making available through executive order about $345,000, the balance of this fund. General Lord also stated that he would advocate the establishment of a large reserve fund to cover the needs of great disasters in the future.

Another resolution passed provides for a uniform plan of carrying out a study of diphtheria and meningococcus meningitis. A report of the conclusions and recommendations will be submitted to the next Annual Conference. The President of the Conference will appoint a committee to devise a plan for this study.

The Conference passed a resolution asking the U. S. Public Health Service to print, as a *Public Health Bulletin* available to all health officers, the data recently collected by the Industrial Health Division of the Rockefeller Foundation. The data include the history, organizations, functions, and resources of the various state and provincial departments of health. The bulletin to be distributed will include similar information regarding the U. S. Public Health Service which will be prepared under the direction of the Surgeon-General. The material regarding the Dominion of Canada health departments will be prepared under the direction of the Minister of Health of the Dominion of Canada. It will also contain a brief account of the Conference.

Following the adoption of this resolution the Conference acknowledged the work done by the Rockefeller Foundation under the direction of Dr. F. F. Russell, Director of the International Health Division, and Dr. John A. Ferrell, Associate Director, and associates, Dr. Smiley, Dr. Covington and Miss Meade. The Conference sent a letter of appreciation to Dr. George E. Vincent, President of the Rockefeller Foundation, and Dr. F. F. Russell for the service to the state and provincial health departments.

In another resolution the Conference endorsed H. R. 10125. This bill provides for the coördinating of the public health activities of the government.

A resolution passed directs the Executive Committee of the Conference to create an organization whose function shall be to meet the public health emergencies of a great disaster. The details of how the organization would work will be submitted to the Conference for approval and adoption.

In regard to the administrative problems of health and education of the Indians it was resolved by the Conference that the various commonwealths having numbers of Indians should make special efforts for the close cooperation with the federal government, along lines beneficial to both the white and Indian citizens. The coöperative health work made possible by special preparation in Wisconsin was cited as an example for other states to follow.

NEW CHIEF ENGINEER IN MILWAUKEE

ROBERT CRAMER, a member of the Public Health Engineering Section of the A.P.H.A., has been appointed Chief Engineer of the Sewerage Commission of Milwaukee, Wisconsin. For several months preceding Mr. Cramer's appointment the Sewerage Commission was operated under direction of a committee of the engineering staff.

For six years Mr. Cramer has maintained an office as consultant engineer in Milwaukee. During the war he was Chief Engineer of the Kingsford Foundry and Machine Works, Oswego, N. Y.

TEXAS SANITARIANS TO MEET IN HOUSTON

THE TEXAS SHORT SCHOOL for Sanitarians will hold its annual meeting at Houston, Texas, November 1–4, 1927. Dr. A. H. Flickwir is chairman of the program committee. Dr. J. C. Anderson, state health officer, is a member of the program committee.

According to the tentative schedule, the first three days of the meeting will be devoted to the regular program of the sanitarians, and on the fourth day a special program for milk sanitation inspectors has been planned under the leadership of Leslie C. Frank, Sanitary Engineer, U. S. Public Health Service, Montgomery, Ala.

TENNESSEE IN BIRTH REGISTRATION AREA

Tennessee has been admitted into the Birth Registration Area for 1927. Members of the A.P.H.A. Committee to Aid Completion of Registration before 1930 were helpful in obtaining the admission of Tennessee.

PROFESSOR WINSLOW AT CALIFORNIA HEALTH INSTITUTE

PROFESSOR C.-E. A. WINSLOW, professor of public health, School of Medicine, Yale University, and formerly president of the A.P.H.A., is among the prominent public health authorities who will give a series of lectures at the Health Institute of the Los Angeles County Public Health Association, Los Angeles, California, June 20–July 8. The institute program is divided into two sections—one for technical instruction and the other for the general public.

MICHIGAN PUBLIC HEALTH INSTITUTES

WEEK-END public health institutes will be held at the University of Michigan under the auspices of the Department of Hygiene and Public Health each Friday and Saturday during July and August. The institutes will offer courses in general hygiene, public health nursing, municipal aspects of health administration, vital statistics, mental hygiene, infant and child hygiene, nutrition, dental hygiene, tuberculosis, communicable disease control, health education, venereal disease as a public health problem, rural sanitation. The lectures will be given by prominent sanitarians and educators.

PUBLIC HEALTH ADMINISTRATION

HENRY F. VAUGHAN, D.P.H.

QUESTIONNAIRE SURVEY OF MILK-BORNE DISEASE—1926*

S. J. CRUMBINE, M.D., FELLOW A.P.H.A.

General Executive, American Child Health Association, New York City

A QUESTIONNAIRE was sent to the health officers of the states and territories of the United States and the Canadian provinces, to determine the number of milk-borne epidemics occurring in 1926. Answers were received from 56 health officers† out of a total of 62 questioned. A total of 69 milk-borne epidemics involving 2,815 cases, and causing 92 deaths, was reported. The results of the questionnaire survey are given below:

NUMBER OF MILK-BORNE EPIDEMICS OCCURRING IN 1926, REPORTED BY 56 STATE, TERRITORIAL AND PROVINCIAL HEALTH OFFICERS OF NORTH AMERICA

Disease	1926 Number of Epidemics	Cases	Deaths
Total—All Milk-Borne Disease.	69	2,815	92
Diphtheria	3	64	0
Scarlet Fever	4	205	3
Septic Sore Throat	4	1,038	9
Typhoid Fever	54	1,191	80
All Other[1]	4	317	0

[1] These include two outbreaks of "acute gastro-enteritis," one, the cause of which was given as "paratyphoid A," one "intestinal outbreak."

The characteristics of the various epidemics are evident from an inspection of the number of cases. Four epidemics of septic sore throat involved almost as many cases of this disease as did 54 epidemics of typhoid fever. One septic sore throat epidemic alone involved 600 cases. The typhoid fever epidemics caused an average of only about 22 cases per epidemic, but their frequency raises the total number of cases of milk-borne typhoid. The recent severe typhoid outbreak in Montreal, due to infected milk, which in the period from March 4 to April 23, 1927, involved 2,441 cases, may be noted as a warning of the extent to which typhoid fever can spread if sanitary protection be deficient.

The health officers were asked to report the total number of cases of diphtheria, scarlet fever, septic sore throat, and typhoid fever due to all causes, including milk. Thirty-seven health officers reported 248,030 cases of these diseases, only 1,695 cases (less than 1 per cent) of which were reported to be due to milk. The cases of milk-borne typhoid fever constituted 4 per cent of all cases of typhoid fever reported (1,191 of a total of 29,459 cases of typhoid fever reported being milk-borne). It would seem either that milk-borne disease is diminishing, or that epidemiological investigation is still incomplete in many states. The evidence from letters of the health officers points to the latter conclusion. Indeed, we cannot obtain more than a crude estimate of the number of milk-borne epidemics until we are assured that all states make scientific investigations of their epidemics. Complete morbidity reporting is the first step toward this end, but to 100 per cent reporting of communicable disease must be added adequate investigation of the cause of epidemics if we are to learn the true extent to which milk spreads infection.

Two states reported the addition of an epidemiologist to their health department personnel during the second half of 1926. The reports of milk-borne epidemics from these states are necessarily incomplete. No doubt several other states have made incomplete reports due to inadequate personnel.

The questionnaire included a request for the history of epidemics listed by health officers. Nineteen such histories were sent by the health officers of California, Connecticut, Indiana, Kentucky, Minnesota, New Jersey and Tennes-

* Read at Annual Conference of State and Provincial Health Authorities of North America, Washington, D. C., May 14, 1927.

† Reports were received from the health officers of Alberta, British Columbia, Manitoba, New Brunswick, Nova Scotia, Ontario, Quebec, Saskatchewan; of the District of Columbia, Alabama, Alaska, Arizona, Arkansas, California, Canal Zone, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Porto Rico, Rhode Island, South Carolina, South Dakota, Tennessee, Utah, Virginia, Washington, West Virginia, Wisconsin, Wyoming.

see; for 6 of these states the histories covered all epidemics reported. The writing of a complete report of an investigation is usually the final step in an orderly, scientific study, and the absence of these for most of the epidemics reported is further indication of the incompleteness of epidemiological investigation.

Among the epidemics reported, that of septic sore throat which occurred in Pleasanton, California, is of interest because of the completeness of the epidemiological study. One hundred twenty-one cases of septic sore throat were reported from June 15 to July 12, 1926; 94 per cent of these cases had used milk from a dairy distributing raw milk. An employe of the ranch which supplied milk to the dairy, and several members of the owner's family, gave histories of sore throat. A culture from the throats of 2 of this group showed the presence of the hemolytic streptococcus, which was also present in milk from a cow showing recent udder infection.

The septic sore throat outbreaks in Guilford and Hamden, Connecticut, involved together 318 cases. Both outbreaks were traced to cases of sore throat among employes of the dairies supplying most of the cases. The dairy involved in the Hamden outbreak distributed certified milk, proving again that certified milk offers as good a medium for the growth of bacteria as does milk produced under inferior sanitary conditions, and that the only complete safeguard for all milk supplies is pasteurization.

It is of interest to compare the incidence of milk-borne outbreaks in 1925 and 1926. A similar questionnaire survey in 1925 brought reports of 44 epidemics from 49 health officers. Returns were received from seven more health officers in 1926, yet this does not explain the increase of 25 epidemics. Such evidence must disturb our complacency and stimulate efforts to prevent further increase of milk-borne disease when pasteurization, so simple a safeguard, is at hand.

Professional **Coöperation**—Dr. C. A. Probst, a former President of the American Public Health Association, and a member of the Advisory Council of the Ohio State Health Department, spoke very frankly on the necessity of coöperation between the health officer, the practicing physician, and the social worker, in a presentation at the Annual Conference of Ohio State Health Commissioners.

There is a triangle in health relations which has caused considerable agitation. We have the official, governmental health organization, national, state and local; our unofficial volunteer, health and welfare associations; and our medical organizations, unattached, or at least, not in touch with the others.

There are many signs of unrest with the present order of things. We have been saying for years that the success of health work depends upon the physician. The physician is showing signs of a good deal of dissatisfaction with many lines of welfare work and with some lines of official health work.

We can hardly believe that self-interest or envy on the part of the physician is to any great extent to blame. The free examinations and treatments of patients, medical and operative, by representatives of government agencies, or welfare organizations, seem to be a particularly sore spot.

The non-paid volunteer health organizations (I have been connected with one for twenty years) complain that they do not receive the support of the family physician to which they feel they are entitled. Of late years, it is true, there has been much better coöperation. Some enthusiasts are saying, "Every physician must be a health officer; he shall be the family health adviser, and collectively, a guide to their respective communities in all health matters." Is he fitted for this rôle? Are our medical colleges giving adequate training in hygiene and public health to their students?

I want to relate how bad the situation was in Columbus some years ago. For years Columbus had been scourged with typhoid fever, and the water supply was known to have been seriously polluted. The State Board of Health insisted upon a water filtration plant, but it required a favorable vote of the people to provide the money. Six of our leading physicians, all of them college professors, and one an ex-health officer, issued a signed statement in the press urging the people to vote against the bond issue, telling them that it was impossible to remove the germs of typhoid fever by filtration. The ex-health officer proposed, instead, to allow the impounded water to flow over a series of low dams, with the assurance that the sunlight would destroy the germs. Although Columbus is famous for its sunsets, he could give no assurance that the sun would shine every day.

I am not trying to minimize the importance of the present-day physician in family or even public health work. He is, after all, the foundation stone on which such work must rest. He cannot be, without additional and adequate training, both the bottom and the top stone of such a

structure. He must be ready and willing to follow and back up those of the profession who have become so qualified.

Theoretically, all public health work should be in the hands of the constituted health authorities; but it will be a long time, if ever, before society can afford to do away with volunteer help.

A man likes to quote his own statement even though he may be wrong. Years ago I said that if I could discover sure means to prevent tuberculosis I would not at once give it to the world. People were just beginning to realize that all efforts to promote good health were weapons with which to fight tuberculosis. In other words, to put an end to tuberculosis might stop or delay the fight for health on other battle fields. This was doubtless an extreme and somewhat fantastical viewpoint. I mention it now merely to show that there was, and still is, a place and a need for agencies outside of governmental officials in the greater health program as we see it to-day.

What is the answer to this line of reasoning if there is any answer to it? Is it not friendly and efficient coöperation? Many a triangular situation has been settled without the divorce court, and I feel sure that with a little yielding here and there a better understanding will result.

I wish to make a confession and a recantation. Some years ago I spoke before the National Tuberculosis Association against the health work proposed by the Rockefeller Foundation. My argument was that constructive health work was the plain duty of the government, should be paid for by the government, and should not depend upon the financial support of some wealthy individual who might accidentally become interested in public health work. I said that it would discourage appropriations to have some private fortune, perhaps temporarily, bear this load which all the people should help carry, and it might seriously interfere with official health organizations.

Time has shown how wrong I was, and I wish to offer my apology through our distinguished guest, Dr. Geo. Vincent, President of the Rockefeller Foundation. There probably was never any cause for the fear which I expressed; but if such uncharted shoals ever did exist, we may well believe that the wise hand and far-seeing vision of Dr. Vincent kept the barque in clear deep waters.

In the review of 1925 of the work of the Rockefeller Foundation he says, "In only a few of these activities do the private funds come into direct relations with the tasks of the government. Efforts to substitute voluntary for governmental machinery are pretty sure to make trouble. It is only government that can maintain the sole basis of a sound public health organization."

Susceptibility to Scarlet Fever—At the Annual Conference of State and Provincial Health Authorities on May 14, 1927, Dr. R. E. Dyer of the Hygienic Laboratory, Washington, presented an interesting chart showing the percentage of children found susceptible to scarlet fever, as indicated by the Dick test, in different groups. The first group consists of children in rural schools, 72 per cent of whom were found susceptible. In the second group, consisting of children from city schools, the per cent of susceptibles was only 50. In the third group, consisting of children in institutions without reference to history of recent outbreaks of scarlet fever, the percentage of susceptibles was only 18. In those institutions which gave a history of having had no outbreak of scarlet fever there were 38 per cent of children susceptible to scarlet fever, while in institutions with a history of scarlet fever outbreak the percentage of susceptibility had been reduced to 8.

County Health Units—In reporting, as Chairman of the Committee on Full-Time County Health Units, Dr. J. A. Hayne, Health Officer of South Carolina, stated at the recent Conference of State and Provincial Health Authorities that on January 1, 1926, there were 301 full-time county health units in the United States. By January 1, 1927, the number had increased by 40, reaching a total of 341. Dr. Hayne knows of no failure which has occurred in a county health unit where such unit has been in operation for the last two years. Several states (Georgia, Utah, Virginia, Pennsylvania, and Florida) have combined units and two or more counties have united to form a single administrative unit with a common health department. There are now 17 state health departments which have a division which deals exclusively with county health organizations.

LABORATORY

C. C. Young

A CULTURE BOX FOR GROWING BACTERIA ON A LARGE SCALE

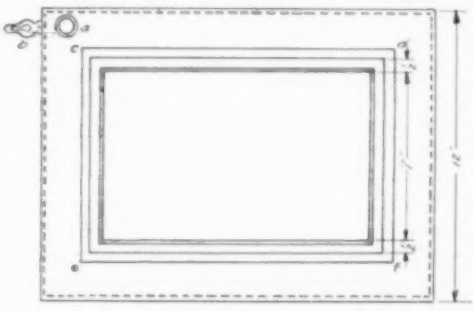
P. G. Heineman, Ph.D., Fellow A.P.H.A.
Cook Laboratories, Inc., Chicago, Illinois

THE CULTURE BOX herein described and illustrated was designed for producing cultures of bacteria on a large scale for preparing bacterial vaccines. The same box may, of course, be used for growing bacteria for any purpose, when large quantities are required. The box is made of copper and lined on the inside surfaces with tin. The box is 16 inches long, 12 inches wide and 3 inches high. Sketch 1 gives a view of the top. At (a) there is a hole the size of the diameter of a small culture tube. In this hole a small tin cylinder is inserted in order that a cotton stopper may be pushed into it. At (b) is a small faucet through which the suspension of bacteria can be guided into a stockbottle. At the outlet of the faucet a small piece of rubber hose about 2 inches in length is attached. A rectangle (c-d-e-f) 8 x 12 inches is cut out of the top and a shelf (see Sketch 2, b-c) attached. This shelf is shaped as appears at (b) and (c) (Sketch 2). A line of cotton is placed in the depression of the shelf and a piece of fairly stout glass is used as cover. This cover of glass should be pressed tightly on the cotton. The size of the glass is 7¾ x 11¾ inches.

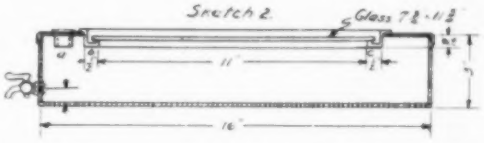
The procedure is as follows: After the box and the glass are thoroughly washed and dried, cotton is placed in the groove of the rectangle and the glass pressed firmly on the cotton. The hole (a) (Sketches 1 and 2), is plugged with cotton and the end of the rubber hose which is attached to the faucet is also plugged with cotton. The culture medium, sufficient in quantity to form a layer of at least ¼ inch should be placed in the box before the glass is finally pressed on the cotton. The box is now ready for sterilization.

Inoculation is made by floating a suspension of the bacteria on the surface of the culture medium. The bacterial suspension is taken up in a glass bulb and the point of the bulb is introduced through the cotton stoppered hole (a), exactly as would be the case if a culture were inoculated. By gently tipping the box the suspension is evenly distributed over the surface. This can be observed through the glass.

Sketch 1



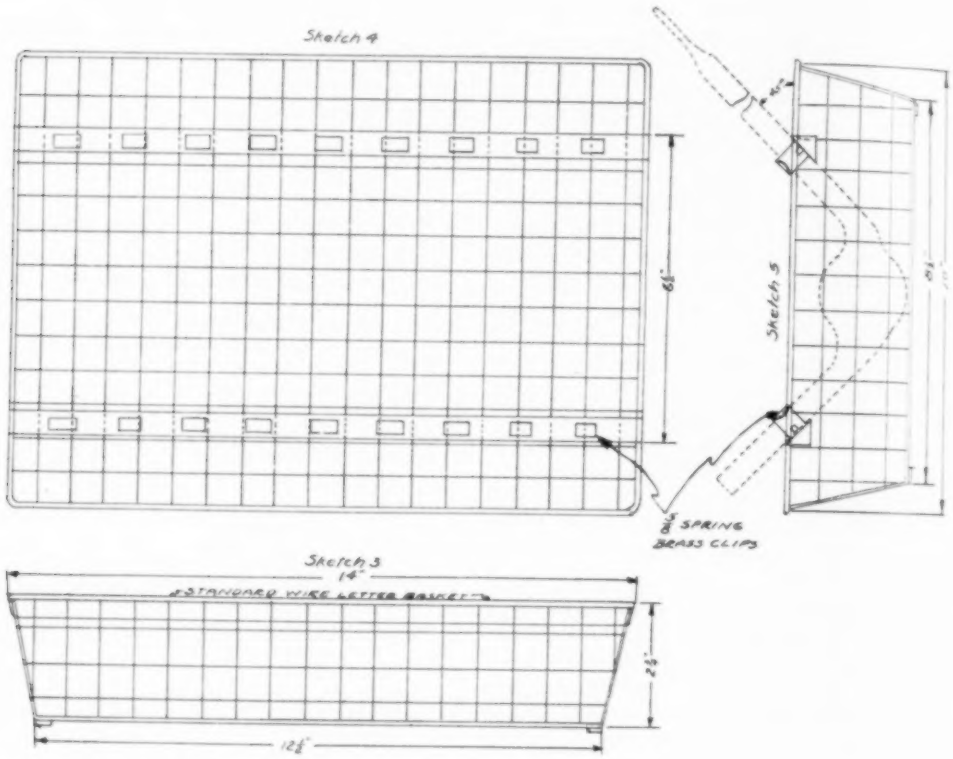
Sketch 2.



After incubation, sterile physiological sodium chloride solution is taken up in a glass bulb and the solution introduced into the box through hole (a). When the surface is completely covered, the box should be allowed to stand for one or two hours, after which the bacteria can be easily suspended by gentle tipping. The suspension is finally discharged through the faucet and rubber hose. Sometimes the faucet is closed by some of the culture medium entering. In this case a piece of hot wire, or soaking in hot water, will soon clear it out.

When working with bacterial vaccines a large number of glass bulbs are required and it soon became evident that a specially constructed piece of apparatus was desirable to hold the bulbs in proper position. The basis for this bulb holder is a standard letter basket, 14 inches long on top, width 10 inches, and height 2¾ inches, as shown

in Sketch 3. On each of the long sides a strip of brass, 7/8 inches wide, was fastened 2 inches from the edge to the heavy wire at the top of the short side, and the strip bent at an angle of 45°. At regular intervals brass clips are attached to the brass strip as shown in Sketch 4. These clips, due to the angle of the brass strips, incline towards the ones on the other strip at an angle of 90°. The effect is shown in Sketch 5. It is seen that the two ends of the bulb rest in the clips and are held in position, while the blown part is resting on the bottom of the basket, which may be covered with cotton.



We have found the two pieces of apparatus described to be efficient and saving in time and material. Contaminations in the culture boxes were very rare and this is not surprising in view of the fact that the exposure of the culture medium to the air during manipulation is no greater than when tubes or flasks are used. The suspension of bacteria for inoculation of the boxes was obtained by growing the organisms in a few culture tubes, in order to obtain a suspension of sufficient density. The basket for holding glass bulbs has practically done away with breakage.

VITAL STATISTICS

LOUIS I. DUBLIN, PH.D.

The Declining Tuberculosis Death Rate—In the first three months of 1927, the mortality from pulmonary tuberculosis among the Metropolitan Life Insurance Company's industrial policyholders declined nearly 7 per cent from the figure for the corresponding period of last year. The death rate for white lives at the end of the first quarter was at the astoundingly low figure of 70.9 per 100,000. Since the mortality in the first part of the year is always much higher than at other seasons, it is almost certain that the full year of 1927 will set a new low record and probably by a large margin. Among the colored, a large rate of decline has also been observed during this period, indicating that the improvement is not limited to any one race or to any single area of the country. We have every reason to believe that the same condition will be found to prevail in the general population as well as among these insured lives.

The record of the last 5 years has been consistent with the estimate made in 1922, that the mortality rate from tuberculosis would continue to decline and that in all probability it would drop to 50 per 100,000 by the year 1930. Unless there is a marked check in the current rate of decline, this very much desired goal of the tuberculosis campaign is likely to be achieved. It is only necessary that the present era of prosperity continue with full employment at high wages for the workers of the country, and that the efficient preventive and educational work of public and private health agencies be maintained at a high level.

The time is, therefore, in sight when tuberculosis will no longer be the scourge of early adult life but will assume a relatively minor position as a cause of sickness and death. Tuberculosis is an infectious disease, and as such is subject to certain limitations which have been found to affect other infectious diseases. The ever-decreasing number of deaths mean correspondingly fewer advanced cases; and as each advanced case is a focus for new infections, the reduction in their number will reduce the number of primary infections in the new generation. It is entirely possible that we shall soon have reached a point at which the number of new cases arising by infection from the existing advanced cases will be insufficient to maintain a significant level of new infections. In that case, it would seem that the disease must ultimately disappear or at least be reduced to a rare phenomenon. The Metropolitan intends to investigate the statistical material available to ascertain whether it contains evidence in support of the above supposition.—*Stat. Bull.*, Met. Life Ins. Co., 8:1–2 (May), 1927.

Diphtheria Mortality in Large Cities of the United States in 1926—The rate for the total population of the 70 cities showed a slight decline from 9.74 to 9.48. With the exception of the east north central states where a marked increase in the diphtheria death rate took place, and the east south central states where a lesser increase occurred, most of the geographic divisions showed a notable decline over the preceding year. This was particularly marked in the New England, middle Atlantic and west north central states.

The New England cities had relatively low diphtheria death rates (6.75) in 1926 as they did in 1925. Six of the 12 New England cities reported a high mortality rate in 1926, but the great decrease in Boston (from 12.7 to 6.9) brought down the rate for the group as a whole. The cities in the middle Atlantic states showed somewhat greater improvement, 11 of the cities recorded a decline and brought the rate down to 9.07. The south Atlantic cities rank well, with a rate of 6.38, although there was a slight increase in Norfolk and Richmond and a more considerable one in Atlanta. In the east north central states, although Youngstown and Canton reported rates under 2, is found the highest rate in the United States, 12.84. This high rate is due to the epidemics in Columbus, Cleveland and especially in Detroit, where the mortality rate was 34.8. The 4 cities in the east south central states with a general rate of 6.82, varied from 2.2 in Louisville to 20.4 in Nashville. The west north central cities, with a rate of 10.04 registered decreases in all except the cities of

Duluth and St. Louis, where the rates rose from 0.0 in 1925 to 3.5 and 11.2 to 13.1 respectively. The west south central cities with a general rate of 7.77 have not for the most part showed much reduction in the past 10 years. The cities of the mountain and Pacific states had a rate of 7.20 largely because of the high rates of Salt Lake City and Tacoma.

Of the 10 cities that had the highest diphtheria rates in 1925, Utica, Camden, Minneapolis and Tacoma appear on the similar list in 1926. Four of the 10 lowest cities in 1925, Norfolk, New Haven, Syracuse and Seattle appear on the low list of 1926.—*J. A. M. A.*, 88:1396–1398 (Apr. 30), 1927.

The Last Census: England and Wales—According to the *General Report on the Census of England and Wales, 1921,* published on April 19, the population numbered rather more than 37¾ millions, 649 to each square mile on the average, or about an acre a head—a density greater than that of any country in the world for which statistics are available. Nearly 80 per cent of the population were enumerated as living in urban areas, and of these practically half were found in comparatively dense aggregates represented by the 46 towns each containing more than 100,000 persons. Families are, on the whole, smaller than they were ten years ago, and since small families are able to command a higher standard of housing than the larger, they have absorbed a greater share of the available house room than they had in 1911. The proportion of population living under the overcrowded conditions of more than two persons in a room was 9.1 per cent in 1911 and 9.6 per cent in 1921; in Northumberland and Durham 30 per cent of the population are in the overcrowded category; while in London the proportion is 16 per cent. The war has been responsible for a greatly increased disparity in the numbers of the two sexes, the surplus of women now exceeding 1,700,000, as compared with less than 1,200,000 in 1911. Among the marriageable population the disparity is greater, and between the ages of 30 and 35 there are 1,470 unmarried females for every 1,000 unmarried males. The number of aliens has fallen from a proportion of 790 per 100,000 total inhabitants in 1911 to 602 in 1921, though immigration from Belgium and the United States of America has increased. The average for all married men was only 1.27 children apiece. More than 43 per cent of the married men returned no children under 16, while in another 23 per cent there was one child only. Miners return the largest families on the whole, but their average was only 1.82 for each married man while the average for professional men was 0.90.—*Brit. M. J.*, 1:770 (Apr. 23), 1927.

Scottish Vital Statistics—The 288th return of the Registrar-General for Scotland shows a low and falling birth rate, a low marriage rate and a low death rate. The number of births registered in 1926 was 102,450, the smallest number of any year since 1856 with the exception of 1917 and 1918. The birth rate was 20.9 per 1,000 while the infantile mortality rate was 83 per 1,000 registered births, the lowest of all previous years with the exception of 1923 when it was at a minimum of 79. There were 63,775 deaths registered in 1926 and a death rate of 13.0 which was the lowest annual death rate of Scotland yet recorded with the exception of 1923 when the rate was 12.9.

The principal epidemic disease death rate for the year was 0.63 per 1,000, and was 0.35 less than the mean for the 10 preceding years. The death rate from tuberculosis of the respiratory system was 69, and 99 for all forms of tuberculosis. Both of these rates are the lowest yet recorded. Deaths from malignant tumors numbered 6,641 which is 34 less than in the previous year but 690 more than the mean for the preceding 10 years. Deaths from enteric fever, bronchitis, pneumonia and violence are less than those registered last year, but measles and influenza showed an increase. Deaths from encephalitis lethargica number 15 more than in the previous year and deaths from cerebrospinal meningitis 25 more than in 1925.

In the larger burghs taken collectively the birth rate for the year was 22.2 per 1,000 and the death rate 14.1. The birth rate for the smaller burghs was 20.4 and the death rate 12.6, while in the county or extra-burghal districts, they were 20.4 and 11.7 respectively. The death rate for tuberculosis of the respiratory system in the larger burghs varied from 98 per 100,000 in Greenock to 39 in Perth.—*Med. Off.*, 37:142 (Mar. 26), 1927.

French Vital Statistics—The population of France in 1926 was 40,745,000 according to the preliminary statistics of births, marriages and deaths. This is less than the population figure computed for the same area in 1913, namely, 41,470,000, but is an increase over 1920 when it was 39,300,000. Contrary to the popular belief, there is no very striking decline in the birth

rate of France. The number of births in 1913 was 790,355, a rate of 19.1 per 1,000; in 1926, it was 766,226 or 18.8 per 1,000. The number of children dying below the age of 1 year in 1926 was 74,698 as compared with 68,367 in 1925. The infant mortality rate for 1926 was 97, in 1925 it was 89, and in 1924 85 per 1,000. In the death rate at all ages there has been hardly any movement since the war, having in view the increase and decrease of the population.—*Med. Off.*, 37:217 (May 7), 1927.

Homicide Death Rates in the United States and Canada—There are nearly 12 times as many homicides per 1,000 population in the United States as in England and about 5½ times as many as in Canada. This comparison includes our colored population, in which the homicide rate is very high, but even when restricted to white people our rate still approximates 7 times that for England and Wales.

Figures compiled for 1926 up to and including November 27, indicate that the rate will be a little lower than for 1925, 1924 or 1923. These 3 years, however, with 1917, showed the highest homicide mortality ever recorded among the industrial population. During the period 1911–1926, the homicide population has shown a slightly upward tendency while at the same time the rate for accidents was greatly reduced and for suicides almost halved.

Among white policyholders the highest rate for 1925 (12.4 per 100,000) was recorded for the industrial population of Arkansas cities, the next was 11.1 in Tennessee, 10.5 in Florida, 10.0 in Alabama, 9.4 in Nebraska, and 8.4 in Oklahoma. There were no homicides in Maine, New Hampshire, Vermont, Delaware, Colorado and Oregon. The homicide death rate was much below the average for Massachusetts, Rhode Island, Connecticut, Wisconsin, Minnesota, Iowa, District of Columbia, and Utah. Canada, New Brunswick, Manitoba, Saskatchewan, and Alberta did not record a single homicide among their urban industrial population during 1925; in Quebec and Ontario the rate was negligible.

In 1925 the homicide death rate for negroes in the industrial population was exactly 9 times that for the white. Oklahoma had a death rate of 115.2 per 100,000 of its colored industrial population; other high rates were 78.2 in Minnesota, 66.1 in Michigan, 59.9 in Nebraska, 56.0 in Missouri, 53.9 in Illinois, 50.5 in Florida. The lowest death rate of 9.1 was in the New England States.

The relative rank of the several states cannot be considered to reflect in every instance conditions prevailing in the general population of those states. This rank may be changed in many instances especially for those states which have large rural population. At all significant age groups homicide mortality runs higher among the general population than among Metropolitan industrial policyholders. The homicide rate for males among this insured group in 1925 (11.7 per 100,000) was exactly 3 times that for females (3.9).—*Stat. Bull.*, Met. Life Ins. Co., 7:1–4 (Dec.), 1926.

Vital Statistics of the Large Cities of Germany in 1926—In 1926 there were in the large cities of Germany, 240,275 living births (14.1 per 1,000 population) and 174,268 deaths (10.3 per 1,000). The birth rate, which in 1925, after a marked decline which extended into the second half of 1924, had increased from 14.1 up to 14.7 living births per 1,000 population, dropped back again in 1926 to the low status of 1924. The general mortality rate, 10.3 per 1,000, was 0.1 and 0.4 respectively below that of 1925 and 1924 which were already distinguished by their especially low mortality. The decline in mortality since 1924 except for an increase in the 40–60 age group in 1925 and the 60–100 age group in 1926 was steady in all age groups, but most marked, in 1925, in the 15–20 age group and in 1926 in the young children group.

The typhoid epidemic in Hanover caused about 250 deaths, while there were 230 more typhoid deaths in other large cities. Deaths from scarlet fever and whooping cough showed a slight increase, whereas deaths from other infectious diseases in general, even including influenza, decreased. The constantly decreasing number of deaths from tuberculosis exerted a decisive influence on the general mortality rate. This decrease in 1926 was more marked in children under 15 than in other age groups. Deaths from cancer and other malignant neoplasms showed few changes in 1926 but cerebral hemorrhage and cardiac diseases were responsible for a somewhat larger mortality than usual.

The mortality from puerperal fever, particularly the incidence following miscarriages, showed a decrease in 1926. Suicides increased during the first half of the year but in the second half there was a perceptible decline. There was also a marked decrease in the number of fatal accidents in the large cities.—*J. A. M. A.*, 88:1658 (May 21), 1927.

PUBLIC HEALTH ENGINEERING

ARTHUR P. MILLER, C.E.

Sanitary Survey of the Coal Mines of Alabama—This report considers the sanitary and health conditions of 21 towns and 4 mine villages according to surveys made in the past few years under the headings: population, general description of towns, water supply, sewage disposal, industrial waste, health department, communicable diseases, medical inspection of schools, control of food supplies, general sanitation of public places, housing conditions, garbage and refuse disposal, stables, and bath houses.

The sources of water supply are streams, springs and wells. Bored wells are 40′ to 850′ deep; dug wells are 25′ to 60′ deep. Water from some of the streams and springs is used untreated. Where bored wells are used, 30 per cent have pumps, and 70 per cent bottom valve buckets and chains.

None of the towns have sewerage systems. Five per cent of the towns use septic tanks, 45 per cent pail privies, 15 per cent pit privies, 25 per cent open surface privies, and 10 per cent pit and pail.

According to a study made at the Auburn State Agricultural College, soil treated with coal mine water is favorable for the raising of corn. F. V. Meriwether. *Serial No. 2746*, Bureau of Mines, Apr., 1926. Abstr. I. W. Mendelsohn.

Recreational Use of San Diego's Water Supply Reservoir—Privately owned water companies in San Diego County, as well as the city, are featuring recreational use of their reservoirs.

The cost to the city, including interest and depreciation on equipment used, and operating salaries, amounts to about 25 per cent of the gross receipts. There has been coöperation with the California Game and Fish Commission. Water fowl hunting has been regulated. Facilities for campers have been provided.

The sanitary control measures are: (1) Shore line toilets of pan type at half mile intervals; (2) parking of automobiles restricted to designated areas marked by signs and provided with garbage cans and pan toilets; (3) overnight camping restricted to station headquarters on an area draining away from the reservoir, and provided with garbage cans, flush toilets, street lights and other conveniences and attractions; (4) daily shore and water patrol by car and motor boat for supervision and surveillance of permittees; (5) maintenance of all elements in a high state of cleanliness and orderliness. R. C. Wueste. *Eng. News Rec.*, 97:386 (Sept. 2), 1926. Abstr. Paul S. Fox.

Conservancy Districts and Their Possibilities—In this article conservancy districts are discussed under the following heads: (1) Provisions regarding sewage disposal; (2) spreading cost of treatment works; (3) experiences with sanitary districts; (4) water supply feature of act; (5) the situation in Fox Valley; (6) metering required for district supplies; (7) flood control provisions; (8) wide powers of conservancy district; (9) officials of district; (10) how a district may be formed.

While this discussion is primarily based upon the recent acts of the Illinois legislature authorizing the establishment of conservancy districts, the information which it contains is sufficiently general to be useful and applicable to other states. Paul Hansen. *Water Works Mag.*, 65:539 (Nov.), 1926. Abstr. L. D. Bell.

Chlorination and Chlorine Absorption of Water—Chlorination of water supplies has been introduced of recent years into Holland and is now coming into extensive use. Two systems are in vogue; the indirect, which is normal practice in America, in which the chlorine reaches the main bulk of the water to be treated in the form of an aqueous solution; and the direct, in which the chlorine is applied as a gas in a state of very fine division. The main purpose of the present paper is to bring to the notice of those concerned the papers of Wolman in which the fundamental principle of the dependence of the optimum chlorine dosage upon the chlorine absorption of the water was firmly established. In connection therewith is added an instructive review of certain methods in use

for the determination (a) of free chlorine; namely, Froboese's, Olszewski's, Ellms and Hauser's and the Muir and Hale modification thereof, and Winkler's and (b) of chlorine absorption, namely, Wolman's, Froboese's, Bruns's, and Olszewski's. Among many valuable references to the literature, both European and American, such recent American papers as those of Buswell and Boruff and Ole Forsberg are discussed. While it was found that Olszewski's method using benzidine and o-tolidin at the pH of approximately 5.6 at which the blue meriquinonoid color is most intense and least fugitive, is capable of yielding good results, yet the preference is given to the Muir and Hale modification of the Ellms and Hauser method in which is developed, owing to the greater acidity, the yellow holoquinonoid color which is both less fugitive and less closely dependent upon pH control. Olszewski's automatic free chlorine indicator is mentioned with approval. Dr. A. Massink. *Chemisch. Weekblad*, 23:29, 1926. Abstr. Frank Hannan.

The **Pure Milk Problem in Paris**—The present status of milk control in Paris is described in this article. The official control, in the words of the author, operates thus:

From time to time, samples of the stocks of milk offered for sale are collected and are analyzed in the municipal laboratories. If the required percentage of butter fat has not been left in the milk, if too much water has been added, or if the percentage of harmful bacteria is unduly high, the court orders the merchant's stock of impure milk dumped and he is fined. Furthermore, the dealer must post in the front of his shop, for a period of 8 days, the text of the judgment issued against him. However, the dealer usually convinces his customers that the analysis of his milk was incorrect and that he was unjustly fined.

The author also further describes what is being done by the city in regard to milk inspection. The inspection is in the hands of the municipal service for the repression of fraudulent practices. A controversy has arisen between this service and a member of the city council who has had an investigation made by the veterinary service the result of which would indicate that the city inspection was not as efficient as it might be. (From the Regular Correspondent) *J. A. M. A.*, 97:1572 (Nov.), 1926. Abstr. H. A. Whittaker.

Some Observations on Sewage Tank Gases—"(1) Gases from foaming Imhoff tanks contain more carbon dioxide, less nitrogen, and substantially the same amount of methane as compared with gases from non-foaming tanks; (2) the relation of gas composition to foaming is a problem requiring the evaluation of such factors as surface tension, type of biological action, and rate of gas evolution; (3) the amount and heating value of gas available from Imhoff tanks is sufficient to warrant its collection and use for fuel purposes; (4) the higher amounts of nitrogen present in gases from new tanks can be explained, in part, by the 'de-solution' of nitrogen dissolved in the sewage in the digestion chamber to establish equilibrium with gas bubbles containing no nitrogen." A. M. Buswell and S. I. Strickhouser. *Ind. & Eng. Chem. Mag.*, 18:407 (Apr. 1), 1926. Abstr. by E. J. Theriault.

Hookworm and Other Helminthic Infections in India—The author has made a study of the prevalence and epidemiology of hookworm infestation in a number of villages of Eastern Bengal. Very little sanitation was found to exist and when present was primarily for the use of women. Children may or may not use latrines and the males usually go indiscriminately to any place in the open fields. Where latrines are present, the infestation is practically negligible, while in unsanitated districts the rates of hookworm incidence range from 52.5 to 85.7 per cent.

During the dry season soil infestation is almost entirely stopped. Comparatively little infestation was found to develop in the heavily polluted spots under the natural or artificial latrines.

Climatic conditions are said to be favorable for the spread of hookworm infestation from mid-April to mid-November. During the remaining five months, infestation is very limited on account of the dryness of the ground.

Infestations with Ascaris and Trichuris were found to be in direct proportion to the extent to which fecal material is washed into tanks used for drinking water. Asa C. Chandler. *Indian J. Med. Res.*, 14:185 (July), 1926. Abstr. D. L. Augustine.

Hookworm Disease in Cotton Mill Villages of Alabama and Georgia—The value of sanitation as a principal factor in hookworm control is estimated by (1) a comparative study of the incidence and intensity of its infestation in sanitated mill villages and in the surrounding unsanitated rural districts from which the mill population is recruited and (2) by a comparative study of individuals of different lengths of

mill residence in respect to their hookworm infestation and physical fitness. The disease caused by this parasite was found to be limited to those children of less than 3 years' residence in the mill village and the number of light infestations and negative cases increased with the increasing years of residence in the sanitated mill villages.

The mean weight and also the mean hemoglobin of children of less than 3 years' residence were noticeably lower than of those who had lived in the village for longer periods of time. Normal hemoglobin values were found in children of 4 years' residence or longer at the cotton mills. D. L. Augustine. *J. Indus. Hyg., Hyg.*, 8:382 (Sept.), 1926. Abstr. D. L. Augustine.

The Disposal of Sewage Sludge on Farm Land—An investigation of the Royal Commission showed that most of the sewage sludge was dumped into the sea, or pressed and dumped on land, while very little was used for manure. That used by farmers was pressed and given to them for the hauling, which hardly paid the farmers. Successful experiments were made in piping the wet sludge to the neighboring farms. The same machinery used in pressing was used to pump the sludge. The sludge was about 1/200 of the volume of sewage and two men could distribute 5,000 gallons an hour on ploughed land. An acre of land used the sludge from 10,000,000 gallons of sewage. This means that about 24 tons of solid matter were applied to an acre or seven times what the farmer applied when hauling. The cost is only about one-fourth the cost of the pressing method and the demand is greater than the supply. William Clifford. *J. Roy. San. Inst.*, 47:311 (Oct.), 1926. Abstr. Fred Almquist.

Trenching of Night Soil—This paper covers some observations relative to the disposal of night soil by the system of trenching carried on by the writer at Manicktala, a suburb of Calcutta. This city had a population of over 50,000 in 1911 and the ground set apart for trenching purposes was approximately 15 acres, only about 9 of which, however, could be utilized for trenching. The area was on high level ground with a rather rough, porous soil.

The sanitary regulations required that the trenching ground should be divided into three plots, each plot to be trenched once in three years, and cultivated the remaining two. This was done to prevent the land from becoming "sewage sick." The regulations further provided that a trench 8 feet long, 2 feet wide and 1 foot deep should be constructed to take care of 25 gallons of night soil, which gave a depth of 3 inches in the trench. On the basis of 25 gallons of night soil, which would represent the solid excreta of 325 persons, 16 square feet would be required annually. Fifty thousand would require 60 acres annually or 180 acres if the sanitary regulations were carried out. This large area was out of the question.

Experiments were carried on in "ripe soil," that is soil which had been repeatedly trenched and in "virgin soil." In the "ripe soil" experiments, 12 trenches 2 feet wide varying from 6 to 32 feet in length and 1 to 3 feet in depth were trenched and filled with "night soil" in varying depths from 3 to 18 inches. In the "virgin soil" experiments, 8 trenches 2 feet wide varying from 6 to 16 feet in length and from 1 foot to 3 feet deep were filled with night soil in depths varying from 3 inches to 18 inches. Trenches filled February 5, 1917, were examined August 13, 1917, 6 months and 10 days later. In both the "ripe soil" and "virgin soil" experiments it was found that the night soil had dissoluted into earth, leaving no trace of fecal odor.

The writer concludes that repeated trenching of the same plot of ground at intervals of 6 months might be carried on and not necessarily make the soil "sewage sick." This interval, however, might be dependent upon the composition of the soil, sub-soil drainage and activity of the nitrifying organisms. Jahar Lal Das. *Indian J. Med. Res.*, 14:101 (July), 1926. Abstr. R. E. Tarbett.

Trade Pasteurization of Milk and the Public Health—With chemical preservatives forbidden in 1912, pasteurization has been extensively adopted in England to prevent souring, until at present from 50 to 80 per cent of the milk supply of some large towns is so treated. The advantages of pasteurization are enumerated as follows: (1) It prolongs the keeping quality of milk; (2) it is a protection against losses by souring, outbreaks of milk-borne infection, and it guards against tuberculosis; (3) it helps to establish public confidence in the safety of milk and favors its increased sale.

The Ministry of Health has standardized the conditions which must be fulfilled if milk is to be sold as "pasteurized" as follows: holding at 145° F. to 150° F. for 30 minutes, rapidly cool-

ing to 55° F., the bacterial count not to exceed 100,000 per c.c. The method of securing these conditions is not yet standardized but is still in the experimental stage.

The author successively disposes of the objections that pasteurization is (1) a cloak for stale and dirty milk, (2) does not destroy with certainty the tubercle bacillus, and (3) leads to a loss of vitamins. He concludes that pasteurization serves the mutual interests of both the trade and the public. Henry Kenwood. *J. Roy. San. Inst.*, 47:355 (Nov.), 1926. Abstr. G. W. Putnam.

Der Anaerobe Abbau des Abwasserklarschlammes (Anaerobic Decomposition of the Sediment of Sewer Waters) These experiments were conducted to determine the practicability of utilizing the methane gases which are developed in the Emscher well.

The two methods of sewage treatment are the normal alkaline and the abnormal acid method. Thumm and Reichle accept the acid fermentation as the normal process. According to their views the fatty acids are neutralized by the alkaline of the supernatant liquids and by the sludge itself. The ripened sludge plays no part in the process. According to Imhoff's observations the microörganisms in the decayed sludge play an important part. We accept the necessity of the microörganisms but the microorganisms which decompose the fatty acids no doubt play the most important part. This biological process is the most important difference between the two processes of decomposition. In the normal alkaline process the fatty acids are decomposed into CH_4 and CO_2. In the abnormal acid fermentation the fatty acids accumulate and all other fermentations are retarded by the concentration of acid-forming bacteria.

Our experiments have proved the necessity of high buffering solution and of a narrow range in the hydrogen-ion concentration. A pH of about 7.8 seems to be the most favorable for the development of these organisms.

Thumm's recommendation to neutralize the high acidity with lime proves the necessity of a high concentration and the buffering of the supernatant liquids. Upon the addition of lime, contrary to Imhoff's view, very satisfactory results are achieved.

The bacteria which liquefy the solid particles of the sludge play an important part. Variations in temperature affect the intensity of the process to a very high degree. When the micro-flora, the mixing of the sludge, and the proper temperature are established, the process continues normally in a decomposition chamber. In the normal fermentation process no acid accumulation takes place. The abnormal fermentation yields from 100 to 320 millaequivalents and in the normal fermentation all the fatty acids are gradually decomposed; the CO_2 combines with the alkalies to form bicarbonates. Their presence constitutes the buffering of the supernatant liquid.

The three factors which affect the reaction of the supernatant liquids are the following: the rapidity of the acid formation, the rapidity of the acid decomposition and the buffering capacity of the supernatant liquids. The undesirable foaming of the sludge tanks is due to the presence of large quantities of bicarbonates coming in contact with the great quantities of fatty acids which have accumulated. The intensity of decomposition is inversely proportional to the amount of fresh sludge. The volume of gas increases with the increase of fresh sludge. The intensity of the gas formation depends upon the relationship of the fresh and decayed sludge, the micro-flora and the buffering of the supernatant liquid.

Because of serious obstacles we could not determine the effect of temperature variations, although we realize that they play a very important part in the economic operation of a sewage disposal plant. The low ash content of our sludge is noteworthy when compared with Spillner's and Hommon's data.

The normal alkaline fermentation yields a sludge which is the result of definite biochemical decomposition. The chemical character of this process is affected by three factors: the mixing of the fermenting materials, the biological and physiological characteristics of the micro-flora decomposing the sludge, and the high buffering action of the supernatant liquid and its pH value of about 7.8.

Our results compare in a satisfactory manner with the results of other authors. The character of the gas formation agrees quantitatively and qualitatively with what has been achieved in other countries. Further experiments upon that phase of decomposition which we could not carry out, namely, the effect of temperature, are important and necessary. K. N. Korolkoff. Experiments conducted at the Moscow Laboratory from 1918 to 1921. Abstr. Frank Raab.

INDUSTRIAL HYGIENE

EMERY R. HAYHURST, M.D., AND LEONARD GREENBURG, PH.D.

Silicosis Among Hard-Ground Workers in Coal Mines—During the last thirteen years the author has worked as tuberculosis officer in an area in which coal mining is the principal industry. Gradually a type of disease has been encountered which was not tuberculosis, or when proved to be such, was quite otherwise in type than the usual case. The workmen had been working with machine drills in what are known as hard headings. When coming out of the headings they are as white as millers from the fine dust encountered. The men rarely take any measures to protect themselves. In an analysis of 22 cases of silicosis, the onset of symptoms has been usually slow and insidious—a considerable number of years. The men varied from 32 to 60 years of age, with a dust exposure of from 1 to 25 years and a latent period to the onset of symptoms from 3½ to 22 years. The average period before symptoms develop was 10.6 years.

Dyspnoea was the first and often the most marked symptom. Cyanosis was rarely present. Pleurisy was the first symptom in 4 cases, in 3 of which tuberculosis was discovered. Cough was the first symptom in 2 cases. Cough with more or less expectoration was recorded in every one of these cases, but does not as a rule trouble the patient as it does in straightforward tuberculosis. The sputum was usually slack. When copious, as in 4 cases, tuberculosis was present. Loss of weight occurred in every case, usually considerable; lassitude and general weakness was present in most cases, but not pronounced early. Spitting of blood occurred in only 4 cases, and was slight in amount, except in one of the tuberculous cases. By the time the average busy colliery doctor has his suspicions seriously aroused, the patient is rarely in an early stage of the disease. Hence the physical signs in these cases which were referred to the author were, for the most part, extensive. The patient acts breathless, his face is typically weatherbeaten, and deeply lined from the nose to the end of the mouth, but not overly pale. The chest wall is more or less thick, and there is overaction of the muscles of breathing. General nutrition is poor and the muscles flabby. Areas of dullness were observed in every case, the most striking feature being a large fan-shaped area spreading out from one or both roots of the lungs. The breath sounds were usually weak toward the bases. Temperature was absent.

The progress of every case was one of steady decline. Out of a series of 22 cases, 16 on X-ray examinations must be considered to have had super-added tuberculosis, on the clinical groupings discussed by the South African investigators. Under prevention, the author suggests that all such workers should be registered, after a medical examination, including the X-ray; they should be reëxamined annually with rigorous exclusion of those suspected of tuberculosis; dry drilling should be abolished by statute; and the best possible types of respirators used with the use of water in the drill hole. —Norman Tattersall, Tuberculosis Officer and Assistant Medical Officer of Health, City of Leeds, *J. State Med.*, XXXV, 4:203-216 (Apr.), 1927.

Study of Industrial Medicine by the National Research Council—It was agreed by the Committee on Problems in Industrial Medicine that there is a need for organized encouragement of research in this field, and the following problems were recommended for immediate consideration:

Elimination of occupational dust hazards of all kinds (such as silica, cement, coal, etc.)

Determination of nature and extent of hazards from exposure to metal products and methods for their abatement

Prevalence and causes of occupational dermatoses

Effect of organic solvents and vapors upon those exposed to them in the course of their production or use

Encouragement and professional training of physicians and others to be the competent advisers of industrial and mercantile establishments

It was decided that a report should be presented at the next meeting of the committee on the existing facilities, personnel, and the re-

sources for research on these problems, and that brief reports should be made on the present state of knowledge in regard to each of the five subjects.—*Month. Labor Rev.*, Apr., 1927, p. 39.

Young **Women and Tuberculosis**—In 25 cities of the United States records show that where male deaths from tuberculosis between 1922 and 1926 show a decrease of 51 per cent over the death rate for the 5 preceding years, female deaths for the same period decreased only 17 per cent. Tuberculosis is the leading cause of death among women between 15 and 30.

The statistics for the U. S. registration area show that it is the cause of 35 per cent of the deaths of girls from 20 to 24, and 30 per cent of the deaths from 15 to 19 years.

The (Cleveland) Anti-Tuberculosis League's study among young women, including both white and negro, shows: 1. That the death rate between 15 and 24 from tuberculosis was higher in 1923 than in 1910. 2. That it was higher than the rate among males of the same ages. 3. That the rate among females between 15 and 19 was 60 per cent higher, and between the ages of 20 and 24, 90 per cent higher than the general death rate for the entire city from tuberculosis in 1923.

Statistics show some astonishing differentials in percentage of decrease in the mortality rates among males and females of all ages, between the periods of 1910–1914, and 1922–1926. The greatest difference is between the ages of 10 to 14 when the mortality rate among boys decreased 97 per cent while among girls only 12 per cent. From 15 to 19, the decrease was 51 per cent as compared with 17 per cent from 20 to 24, the decrease was 51 per cent as compared with 14 per cent among women.

One significant set of figures pointed out is the high percentage in the mortality rate among men from 25 to 29, and from 30 to 39, which is 58 per cent and 59 per cent over the period preceding the war, 1910–1914. The decrease among women for the same ages is 34 per cent and 47 per cent, going to 51 per cent in the 35 to 39 year group.—H. W. Green, Executive Secretary, Cleveland Health Council, *Bull. Ohio Public Health Assn.*, Mar., 1927.

Films **on Women Workers**—The Women's Bureau, U. S. Department of Labor, Washington, D. C., recognizing that good positions for women workers underlie good health, have just released for educational purposes three films, free of charge, to responsible individuals and organizations. "Women who toil and spin through the ages" is historical in nature, showing the progress of women in industry and industrial changes affecting women. "The woman worker, past and present," contrasts conditions in a former era with women's present occupations in factories, mills and workshops. It also depicts the benefits that come to society from modern methods. "When women work" gives the story of two girls at work in different factories, the one under poor conditions, the other in the well-managed plant with high standards.

The Greatest Toll of Tuberculosis Is from Men in Industry—During the last 12-year period there were 10,040 recorded deaths from tuberculosis in San Francisco; of this number 73 per cent were men and only 27 per cent were women. The heaviest death rate was between the ages of 30 and 39, when 2,414 men and 1,772 women died from the disease. The tuberculosis hazard is obviously in the wage-earning group of men during the prime of life. These men have generally established homes; they have wives and children. Usually these children are young. The major portion of the problems of the social workers is caused by this one tuberculosis situation. Throughout the United States, tuberculosis associations have come to see that one of their major problems is to aid in the control of tuberculosis in this group. The clinic stage of the volunteer association has passed. The preventive program occupies the attention of health workers. Emphasis must now be laid upon medical service in industry. There is a geneal agreement as to the plan of procedure. The Philadelphia plan is the one most favored. Whether this plan is the right one or not, every organized tuberculosis association and health association must face the issue squarely and realize that unless in every community there is a preventive program in industry, their work has not yet begun.—W. F. Highby, Alameda County, California *Public Health News*, Apr., 1927, p. 8.

Value of Sodium Thiosulphate in Poisoning from Oral Administration of Arsenic—A truly effective chemical antidote for a poison would possess definite advantages over gastric lavage as a therapeutic measure. The enthusiastic statements regarding the efficiency of sodium thiosulphate as an antidote for various metallic poisons are of great interest. Dennie and McBride state that sodium thiosulphate is "a highly efficient and rapid neutralizing agent for the common metallic poisons—arsenic, mercury, lead, and bismuth." Semon feels that it "may be found an indispensable adjunct in the treatment of all cases of acute metallic

poisoning." In support of these contentions, numerous clinical reports have appeared of cases in which the supposed antidote has seemed to have a favorable influence. The authors hereof drew attention to the danger of drawing positive conclusions as to the value of an antidote in mercury poisoning solely from clinical observations. Haskell, Henderson and Hamilton (*J. A. M. A.*, Dec. 5, 1925, p. 1808) reported experiments which tended strongly to show that sodium thiosulphate did not possess any value at all in the treatment of poisoning produced in dogs by the oral administration of mercuric chloride, although the "antidote" was administered much more promptly after the poison than would ever be possible clinically.

Both the clinical and the experimental observations by Dennie and McBride which support the use of sodium thiosulphate as an antidote for arsenic have been carried out in cases in which the poisoning was produced by organic, nonionic arsenicals. The present investigators carried experiments out on apparently healthy adult dogs. They found that the toxicity of sodium thiosulphate itself is extremely low. Dogs were then given morphine and solutions of potassium arsenite in the dose of 0.5 c.c. per kg. of body weight, administered orally. As soon as possible after this, the dogs were given both orally and intravenously sodium thiosulphate at 24-hour intervals. The authors conclude:

> Whatever may be the virtues of sodium thiosulphate in the treatment of the dermatitis produced by the organic arsenic preparations, there does not seem to be any doubt that it is valueless against the poisoning produced by the oral administration of a solution of potassium arsenite. Our results serve again to emphasize the importance of gastric lavage in the treatment of the poisoning from any orally administered drug, and illustrate the danger of drawing conclusions as to the value of a supposed antidote solely from clinical observations when many other factors may be concerned in bringing about the patient's recovery.—H. B. Haag, and W. R. Bond, *J. A. M. A.*, 88, 16:1219 (Apr. 16), 1927.

The Comfort Zone for Men at Rest Stripped to the Waist—This paper records the results obtained in a series of experiments designed for the purpose of delineating the comfort zone for men at rest and stripped to the waist. The experiments were performed in the psychrometric chamber of the Department of Ventilation and Illumination, Harvard School of Public Health. Eighty-five men acted as subjects, their ages varying from 20 to 55 years. Experiments took place in the winter of 1925–26 and in the summer of 1926. The humidity was maintained at 30 per cent in 8 of these studies and 70 per cent in 8 of the studies. In general the experiments took place in the afternoon and lasted from 2½ to 4 hours. While in the chamber the subjects sat at their ease in chairs and read, wrote or conversed. Every 10 minutes they were asked to express their sensations of warmth in five different groups: 1, cold; 2, comfortably cool; 3, very comfortable; 4, comfortably warm; 5, too warm. In order to eliminate the effects of diurnal changes in the adaptation to atmospheric conditions the region of probable comfort was explored by starting at a warm condition and going to the most comfortable condition and starting at a cool condition and increasing temperatures to the most comfortable condition and lastly by starting at the most comfortable condition and in one series by increasing temperatures and in other series by decreasing temperatures. From these studies the comfort zone for men at rest and stripped to the waist was found to lie between 66° and 83° on the effective temperature scale with the optimum at 72½°. The author feels that the failure to discover evidence of seasonal acclimatization may proceed from either of two causes; the data obtained in the summer may be too few or the seasonal changes in adaptation to climate may be smaller than the experimental error. A valuable thermometric chart for human beings at rest and stripped to the waist is presented. This is similar to the previous charts issued by the American Society of Heating and Ventilating Engineers but in addition is provided with a comfort scale.—C. P. Yaglou, *J. Am. Soc. Heat. & Vent. Eng.*, 33, 5:285 (May), 1927. L. G.

The Respective Per Capita Space Requirements for Window and Mechanical Ventilation—This brief note is a written discussion of a paper originally appearing in the March, 1927, issue of the *Journal of the American Society of Heating and Ventilating Engineers.* In this discussion Professor Winslow points out that the authors of several papers have recently assumed that mechanical ventilation may be conducted efficiently with a per capita space of 200 cubic feet per pupil or less while they continue to assume that window ventilation requires 300 cubic feet or more. It is pointed out that the basis for this discrimina-

[illegible] is a sentence in the report of the New York State Commission on Ventilation which says that in the window gravity ventilation studies 280 cubic feet per second grade child and 310 cubic feet per sixth grade child was used. This is a true statement, but it is to be remembered that for all practical purposes the fan ventilated rooms had space allowances of approximately the same value. It is further pointed out that in certain cases the fan ventilated schools had larger space allowances (Chapter 19 and Chapter 23). The author concludes that there is not the slightest basis in the work of the New York State Commission on Ventilation for the assumption that window ventilated rooms must be designed with more cubic space per pupil than fan ventilated rooms.—C.-E. A. Winslow, *J. Am. Soc. Heat. & Vent. Eng.*, 33, 5:326 (May), 1927. L. G.

The Cardiac **Patient in Industry: Chicago Heart Association Plans Constructive Program**—Realizing the importance of the problem of heart diseases and the placement of the cardiac in industry the Chicago Heart Association conducted a study project of Chicago industries during the past year. This association now proposes a workshop laboratory under scientific supervision for the placement of cardiacs in certain positions for which they are competent. Data from 13 Chicago industries in which 99,000 persons were examined show that 1.3 per cent were rejected because of cardiac involvement. These percentage rejection figures in the various industries appear to vary from 0.3 per cent to 10 per cent, depending no doubt in some measure on the type of examination to which the applicant was subjected. Data is presented concerning 652 patients who attended the six cardiac clinics in a period of one month. This data indicates that 33 per cent of these persons are capable of regular work, that 42 per cent require modified activity and that 25 per cent are not placeable. If the experience at Chicago is in any way indicative of the general attitude one is forced to the conclusion that cardiac workers have poor opportunity in general for work. Nearly one-half of the 34 industries investigated in Chicago rejected all applicants showing cardiac involvement, and 8 will hire only well compensated cases. A last table (4th) presents a condensed analysis of 155 jobs in various processes in 14 industries coöperating with the Chicago Heart Association with a view to developing satisfactory job indexes for cardiac workers.—Data from Thirty-Four Industries, H. E. Mock and Susa P. Moore, *J. Indus. Hyg.*, 9, 5:176 (May), 1927. L. G.

Metal Fume Fever: III. The Effects of Inhaling Magnesium Oxide Fume—In this study four subjects were subjected in two experiments to the inhalation of magnesium oxide fumes generated in an air-tight cabinet. The fume was produced by igniting about 30 g. of magnesium ribbon. After the production of the fume the subjects entered the cabinet and remained there for various periods of time from 1 to 9 minutes. A chart is presented showing the white blood count and the body temperature of Subject A. It appears from this that the peak of the white blood cell count 6 hours after inhalation reached about 16,000 cells. The authors feel that this may possibly be related to the smaller size of the particles than was obtained in the case of zinc oxide where the febrile reaction occurred in from 8 to 12 hours. One cannot doubt, however, as a result of this study that the freshly formed magnesium fume product, magnesium oxide, which is ordinarily considered insoluble and inert will produce a febrile reaction analogous to that produced by zinc oxide fume.—Philip Drinker, Robert M. Thomson and Jane L. Finn, *J. Indus. Hyg.*, 9, 5:187 (May), 1927. L. G.

Acute Respiratory Infections Among Motormen and Conductors—This paper presents the results of a 6-year study of lost time among motormen and conductors of the Minneapolis Street Railway Company. The statistical evidence shows that approximately 9.8 per cent of the motormen and approximately 13 per cent of the conductors suffer lost time on account of colds. The average number of days lost per person, however, is very nearly the same in both cases, the motormen having lost 3.2 days and the conductors 3.7 days. It is computed that the economic loss from these colds is somewhat slightly over $4,000 per annum. In addition to this the study contains data showing the number of days lost from acute contagious diseases but the figures here are rather small. The report stresses the importance of the difference between the two types of employes and their susceptibility to respiratory infection.—H. S. Diehl, Marie Connelly, and D. D. Turnacliff, *J. Indus. Hyg.*, 9, 5:169 (May), 1927. L. G.

FOOD AND DRUGS

WALTER S. FRISBIE

The Influence of Ultra-Violet Light upon Calcium and Phosphorus Metabolism in Milking Cows—Irradiation experiments were conducted on three pure bred Holstein cows which had been on pasture and which prior to the experiment had received a ration of grains, corn silage, and alfalfa hay. Experiments were divided into two parts, first, a preliminary period of 3 weeks in which the animals received no ultra-violet light, the only illumination being provided by ordinary electric bulbs and the second, a period of 4 weeks in which the animals were irradiated 1 hour daily by a quartz mercury vapor lamp at a distance of 22 inches over the back of the animal. The excreta was measured and sampled daily for analysis and composite samples of milk were analyzed, results of which are incorporated in tables. From a study of the data a conclusion was reached that calcium and phosphorus assimilation is not improved in this species of cow by exposure to ultra-violet light. Ultra-violet light appears to have no influence either favorable or adverse on the milk production, nor upon the calcium or phosphorus content of the milk. Suggestion is made that the cows derive antirachitic vitamin from the feed, differing in this respect from man, the goat, the chicken, and probably the rat, all of which can be influenced by the short-wave lengths of radiation.—E. B. Hart, H. Steenbock, and H. Scott, *J. Biol. Chem.*, 73:59 (May), 1927.

Antirachitic Value of Irradiated Cholesterol and Phytosterol—In parallel experiments conducted on rachitic rats which were fed non-irradiated and irradiated cholesterol, it was found that the latter given by the mouth or subcutaneously was unable to raise the calcium content of the blood above normal; nor did it prevent the decrease in calcium brought about by parathyroidectomy. Metabolism tests showed that irradiated cholesterol added to a rickets-producing ration low in phosphorus definitely increased the phosphorus and calcium retention.—Alfred F. Hess and Elizabeth Sherman, *J. Biol. Chem.*, 73:145 (May), 1927.

Influence of Irradiation upon Oxidation Products of Cholesterol—In order to study the effect of ultra-violet light on oxidation products of cholesterol which have a double bond in the molecule, there were prepared in a pure state α and β cholesterol oxides, a cholestantriol, and hydroxcholesterol. Rats were put on a rachitogenic diet when 28 days old, and received this diet 24 to 28 days, supplemented by a 10-day period in which the compound was to be tested and which was not incorporated in the diet but was administered daily in a solution of linseed oil by means of a pipette. α and β cholesteryl oxides, hydroxycholesterol, and α cholestantriol when fed in doses of 3 to 5 mg. per day did not cure rickets and these oxidation products could not be activated by irradiation. This indicates that certain oxidation products of cholesterol may be eliminated as antirachitic factors and that with only slight changes in the cholesterol molecule the activating factor has been destroyed. This work supports the observations of Rosenheim and Webster and Schlutz and Morse that an impurity in cholesterol is the potent factor.—Frederic W. Schlutz, Mildred R. Ziegler and Minerva Morse, *J. Biol. Chem.*, 73:209 (May), 1927.

The Parent Substance of Vitamin D—In their search for the precursor of vitamin D, the authors have supplemented the biological tests with the very valuable spectroscopic examinations of the substance fed. The absorption spectrum of cholesterol was compared with that of ergosterol which with its three double bonds would be expected to show a greater absorption than cholesterol with only one. These assumptions were confirmed by biological tests on rats in which minute doses (1/10000 mg.) of irradiated ergosterol cured and prevented rickets in these animals kept on a rachitogenic diet. Pure sterols were prepared by the removal of provitamin and it was found that cholesterol and phytosterols so purified can no longer be rendered antirachitic by ultra-violet rays. It is concluded that the impurity in ordinary sterols which permits their activation is a sterol of an

unsaturated and labile type of which ergosterol is the only known representative. It is, therefore, believed that the natural parent substance of vitamin D is ergosterol or a highly unsaturated sterol of similar constitution.—Otto Rosenheim and Thomas Arthur Webster, *Biochem. J.*, 21:289 (1927).

Occurrence of Zinc in Man—Our previous conception of the human body was somewhat upset by the demonstration of iodine as a constant and normal constituent. Recent work has indicated that other elements formerly regarded as foreign to the human organism may be accepted as normal. Zinc among other metals falls under this category. Certain foods such as oysters may contain large amounts of this element and it is frequently found in market milk. Drinker, Fehnel and Marsh, on a number of healthy adults of ordinary mixed diets, found excretions of zinc as high as 2 mg. in the urine and 20 mg. in the stools. In one instance the daily fecal output was nearly 200 mg. The conclusion is reached that excretion of unusual amounts of zinc is of little diagnostic importance so far as industrial poisoning is concerned, as this zinc content can be markedly increased by changes in the diet.—*J. A. M. A.*, 88:1640 (May 21), 1927.

The Danger of Irradiating Foods—This is a plea for caution in any attempt to commercially irradiate milk by ultra-violet rays in an attempt to increase the antirachitic power of this food. In endeavoring to increase the antirachitic factor there is danger in the destruction of the vitamin A by oxidation as Drummond has pointed out. The comparison is drawn between the indiscriminate use of iodine drinking water and in certain foods, and counsels against the application of recent investigations to commercial practices.—*J. A. M. A.*, 88:1485 (May 7), 1927.

Fatal Case of Food Poisoning Caused by Fried Oysters—Three men, after eating fried oysters in a Washington, D. C., restaurant, became suddenly ill with symptoms of food poisoning. Two of the men recovered within a few hours while one man died 11 hours after the symptoms developed. Cultures from the stomach content of the patient and from the heart blood and spleen of a white mouse which was inoculated with dilute stomach content and which died 3 days afterward, showed a bacillus which was identified as *B. paratyphosus B.* Examination of the oysters and oyster liquor from the restaurant showed a high *B. coli* count. It is suggested that in addition to the danger of typhoid fever by eating uncooked oysters taken from polluted water, there is also a danger from eating cooked oysters contaminated by sewage polluted water if the oysters are incubated at room temperature for a period sufficient for the production of a heat resistant toxin.—*U. S. Nav. M. Bull.*, 25, 2 (Apr.), 1927.

Possibility of Infection by the Salmonella Group of Bacteria (1)—The authors have studied the rate and extent of growth and physical changes produced in foods by *B. suipestifer, B. pestis caviae, B. sanguinarium* and *B. anatum.* The organisms were cultivated in a variety of foodstuffs, such as may be found in the average home, at icebox temperature, room temperature and body temperature, for periods varying from 24 hours to 72 hours. More or less growth may be expected under these conditions in case the food happens to be contaminated. It was observed in most instances that where the food was contaminated with any member of this group of organisms, the changes in appearance and odor were so slight as to be readily overlooked. The authors conclude: (1) These organisms have been shown to multiply readily in all types of foods except those which have a strong initial acidity. (2) Growth of these organisms is only slightly retarded at icebox temperature. (3) Multiplication of these organisms in foods as a rule fails to produce sufficient changes to be detected readily by physical examination. (4) to assure freedom from the possibility of food poisoning from this group of organisms, dependence must be placed upon the selection of raw products of unquestioned sanitary quality, care in the processes of preparation, so as to obviate contamination, utilization as soon as possible after their preparation, as preservation even at refrigerator temperature cannot be relied upon to maintain them in an edible condition until such time as they may be needed for consumption, and finally, preservation under such conditions as will insure a minimum of growth in case the food has been contaminated.—S. R. Damon and L. W. Leiter, *Am. J. Hyg.*, 7:27 (Jan.), 1927.

CHILD HYGIENE

MERRILL E. CHAMPION, M.D.

Tuberculosis Case Finding in Children—In an article with the above title Dr. Chadwick of the Massachusetts Department of Public Health tells in a few words of the so-called 10-year program of that department, describes the procedure in the underweight clinics, gives some comment on both the first and second year's work, discusses the evidence of tuberculous disease found, and draws certain conclusions.

The children who were examined came within the following groups: (1) children 10 per cent or more underweight for height; (2) those known to be exposed to human tuberculosis in their homes—in other words, contact cases; (3) certain children not in either of the above named classes who were known to be in poor health. The high schools were not included in this survey. It was found that those to be examined constituted about 15 per cent of the school population in the elementary grades. Examinations were made in the school buildings to the number of approximately 130 a day. The children were stripped to the waist, were weighed and measured, had the temperature taken; the physician then examined teeth and tonsils, looked for evidence of adenoids, goiter, enlarged cervical lymph nodes and heart murmurs, and then examined the lungs by auscultation and percussion with special attention to evidence of diseased mediastinal lymph nodes. Von Pirquet tuberculin test was given and X-ray film of the chest was taken in the case of reactors. Reports of the examination were sent to the parents who were recommended to consult their family physician for advice and treatment. A copy of the records was also filed with the board of health, superintendent of schools and the school principals. These formed the basis for follow-up work on the part of the school nurses.

The results of an analysis of the cases examined showed that 4.8 per cent, numbering 553 cases, were diagnosed as hilum tuberculosis. The percentage of hilum cases found in contacts was 14.3 and in non-contacts, 3.2. One case in every 327 was found to have the adult type of pulmonary disease.

Dr. Chadwick's conclusions are given:

Our experience shows that an occasional case of pulmonary tuberculosis may be found in children at any age above 5 years, but not until the age of 14 does its incidence equal 1 per cent of the children examined. Also, the X-ray evidence indicates that some of the cases of pulmonary disease in children extend from the hilum or from a partially calcified, primary focus in the parenchyma of the lung.

In finding these cases, one cannot depend very much on the usual examination of the chest, as the physical signs in hilum tuberculosis are slight and inconclusive and often absent; again, in pulmonary tuberculosis in children rales are seldom found, except in advanced disease. The physical examination of the chest in children is of less importance than in adults; and, when rales are found in a child's chest, they are almost always due to some other condition than tuberculosis.

In case finding, therefore, one should do the cutaneous or intracutaneous test in all children, and then X-ray all the reactors. By so doing the latent, as well as the active cases, will be brought to light. It is of equal importance to find the latent cases in children, because their latency is only relative, as not enough time can have elapsed to thoroughly fibrose and calcify the foci of disease, and reactivation may occur at any time.—Henry D. Chadwick, M.D., *Am. Rev. Tuber.*, May, 1927.

Preparatory Schoolroom Lessons for Health Examinations—High school pupils are being taught to demand preventive health care and also to know what preventive health care is. Immediately preceding the health examination of the pupils of the Junior High School in Lincoln, Neb., the teachers carry on a discussion relating to the procedures that will be carried out during the process of the physical examination. The pupils consider why the doctor asks the questions. They are shown the stethoscope, and the importance of urinalysis as part of the medical examination is explained.

The following 3 questions are asked each pupil:

1. What are some of the things he asked you?
2. What are some of the things he did?
3. What are some of the things he told you?

The questions are written on the board and the answers discussed.

The pupil was able to more intelligently approach the school medical examiner. His con-

cept of prevention was developed, and he gave to the physician 100 per cent coöperation throughout the examination. There was less fear and trembling, if any, because of these preparatory lessons.—Harry L. Long, M.A., *Nation's Health*, Apr., 1927.

Physical **Defects in 1,000 Children**—The data upon which this paper is based were obtained from what the author calls three fairly distinctive social groups. The first comprised 245 dependent children in the Boston Little Wanderers' Home; the second, 357 children coming to the Massachusetts General Hospital for examination and treatment; the third, 398 children taken from Dr. Emerson's own private practice. The tables given in the article include also the results of certain tests made by Emerson at the Massachusetts Institute of Technology and at Dartmouth College.

Emerson comments on his figures as follows: "An adequate examination of physical growth should show an average of from four to six physical defects per child of which about 50 per cent are associated with inflammatory processes of the nasopharynx and 30 per cent are postural." Furthermore, he feels that the greater number of the defects found the greater the percentage of underweight and the less the gain in weight. He thinks that the usual medical physical examinataion, even when carefully made, discovers only about half of the significant defects actually present.—William R. P. Emerson, M.D., *Am. J. Dis. Child.*, May, 1927.

The **Effect of Race on Tooth Structure**—The Department of Health of Bridgeport, Conn., included the nativity of the mother in questions for a recent survey of their 24,000 school children "to determine if possible what part nativity played, if any, in the preservation of tooth structure."

The survey included sixteen racial groups and "the group percentage of cavities in the permanent teeth of the children shows a marked similarity instead of a wide difference as might be expected."

The examinations were made by dental hygienists but without the aid of explorers, so it is very probable that the majority of developmental defects or fissures were not discovered. For this reason, although the survey is interesting, it adds little to our meager knowledge of heredity as it influences teeth.

Other parts of the survey show the comparison between schools having regular dental hygiene programs and those having no work of this kind. In the schools with regular dental programs the percentage of cavities found in the teeth was about one-half of the number found in the other schools, so the general conclusion that "in the preservation of tooth structure, environment and education apparently play a far more important part than does heredity" is probably true.—William Hall Coon, M.D., and Helen Rosenthal, *Nation's Health*, May, 1927.

Simplifying Pediatric Care—Dr. Richardson sets forth clearly the importance of simplified pediatrics for the three persons most concerned—the pediatrician, "his right-hand-man, the professional nurse who specializes in the care of infants and children," and the mother.

The importance of proper training for nurses in methods which can simplify care of children in health and sickness is well emphasized.

The teaching of breast feeding alone, in a way that convinces the new mother that bottle feeding is not only the worst thing for baby but the most inconvenient for herself, is a big step toward much needed simplification of child care.

Again, if baby must have formula feeding for serious reasons how much easier are the plain milk dilutions now used by the doctors.

"Old fashioned colic," Dr. Richardson claims, is almost completely eliminated by breast feeding or by the use of lactic acid milk in formula cases.

A somewhat revolutionary statement is made of the principle that "the healthy baby never overeats and that so-called colic is a pain of hunger or temporary discomfort or pressure due to an air bubble in the stomach."

Simplification of bathing and clothing are described in detail and excellent points made.

Protective inoculation against smallpox, typhoid, diphtheria should be done for every child, and the competent doctor and nurse will try their best so to protect the children coming under their care.—F. H. Richardson, M.D., *T. Nurse & Hosp. Rev.*, Sept., 1926.

Are Pregnancy and Parturition Normal Functions?—For many years a lively discussion has been waged as to whether it is logical to speak of pregnancy and parturition as entirely normal functions under our present conditions of life. Those who have been lukewarm towards or opposed to modern organized effort for the promotion of maternal hygiene have

been apt to feel that too great stress was laid upon the dangers of pregnancy, and some of these persons have been inclined to ascribe to these causes part of the drop in the birth rate. On the other hand, others have held that this theoretical result of public health propaganda was a figment of the imagination and that people need greater rather than less appreciation of the urgency of adequate obstetrical attention.

An editorial in the *Journal of the American Medical Association* for May 21, 1927, discusses pregnancy and parturition from the point of view of their normality and quotes Dr. DeLee as urging the point of view that the function of childbearing has become in the modern civilized woman an event in which many factors may be pathologic. It goes on to state that "if it is realized that the impregnated ovum brings into the body of the host blood qualities not previously there, the student of biology will understand that reactions long since recognized as partaking of pathogenicity take place in the pregnant woman." This view is strengthened by studies of the metabolism of the pregnant woman and her lessened resistance to certain infections. Quoting the estimates of obstetricians that the existence of severe pathologic processes in childbirth vary from 10 per cent upward, the editorial concludes that if progress is to be made in an attack on the death rate from childbirth, we shall have to see a far greater appreciation of the importance of obstetrics than is apparent at the present time.—*J. A. M. A.*, May 21, 1927.

Report on Window Glass Substitutes—An interesting investigation was conducted by the Council on Physical Therapy of the American Medical Association "to determine the efficiency of certain window glass substitutes for transmitting the antirachitic rays of sunlight." It is stated that the materials tested were submitted for this purpose by their manufacturers. Tests were made of the transmission of ultra-violet rays and this was determined both by spectroscopic analysis and by the biologic effects of transmitted sunlight. An attempt was also made to determine what effect weathering had on the physical properties of the materials submitted.

The article goes on to discuss in detail the materials submitted which were Vitaglass, Cel-O-Glass, and Flex-O-Glass. The sample of Corning glass had applied to it the spectroscopic analysis but was not included in the biologic test which was carried out on chickens. The conclusions which were reached as a result of this study are given in the words of the report:

The results of these investigations encourage the belief that there are now available materials for glazing our windows which do not possess the fault of window glass in excluding the health giving rays of sunlight. This belief is particularly engendered because the cages did not have a southern exposure and, moreover, they were of such size that the chickens were not compelled to remain in the sunlight area. A comparatively small amount of exposure to sunlight, even during the winter months, at the latitude of Boston, has a decidedly beneficial effect.

Corning glass and the clear Vitaglass are as transparent to the visible rays as is window glass. Vitaglass is furnished also in a translucent ("Cathedral") form, which is particularly suitable where privacy is desired. Celoglass and Flexoglass are not transparent, but the data presented show their comparative value for use in solariums and for animal husbandry in cases in which transparency is not essential. Both of these substances are less expensive than ordinary window glass, but the Flexoglass does not withstand the onslaught of the weather as well as does the Celoglass. The waxy coating of the Flexoglass has a tendency to soften in hot sunshine and dust may then adhere which is not easily washed off. This material is primarily intended, however, for use in animal husbandry to provide protection in winter. During the hot summer months it may be removed and in the fall reinstalled.—*J. A. M. A.*, May 14, 1927.

Some Observations on the Feeding of Young Children—Merrill Palmer School, because of the often repeated question, "Do your nursery school children always eat their food as they are doing to-day?" analyzed their results by a series of studies involving school atmosphere, standards of service, appearance of food and influence of school personnel.

One of the most important observations made was that children as well as adults appreciate and enjoy really good appetizing food. Therefore, unless food fulfils these requirements one cannot expect them to eat it. Most recipes are based on adult requirements and are not desirable for children from 2 to 5 years. Experiments were made with recipes until a satisfactory product fulfilling the requirements of children was obtained.

It was not possible to buy an appetizing wholewheat bread at the time of the opening of Merrill Palmer School and because of the expense of labor it was not wise to bake their own. After 3 years local bakers were making a satisfactory bread and 90 per cent of the families were giving their children wholewheat bread.

After satisfactory recipes were developed the recipes were adapted to proportions to serve 75 people and workers had to be trained to prepare and serve food in amounts desirable for children.

Another observation was that it is not wise to serve more food than it is reasonable to expect young children to consume. The same food was served to children of all ages but in amounts based on food requirements of different age groups. Second servings were encouraged after eating the standardized portions.

There were the factors of cost of food and labor in preparation to be considered because it was unfair to train a child to like and enjoy foods his family could not afford.

The pleasing appearance of food, color and attractiveness of service have much to do with the attitude of small children toward food. Records were kept of the amount of food served, number of children present, number eating all their food, number having second servings, kind of food chosen, and number returning food and kind of food returned. To rectify the observations made in regard to color, flavor, and consistency of food upon children another study was undertaken. This covered 90 school days. During this period 95 per cent of the children mentioned color in their reference to food.

Variety in young children's menus is an important factor often neglected. This not only means serving different foods but serving the same food in a variety of ways.

That at the school the children helped to serve their food, added much to their pleasure in eating it.—Mary E. Sweeney, *J. Home Econ.*, June, 1927.

EDUCATION AND PUBLICITY

EVART G. ROUTZAHN *

Drs. **Wood and Rowell Say That It Is Technical**—"The subject is a highly technical one in which a few fundamental principles exist but one in which fashions and practices change frequently. Publicity of any sort is a specialty and requires special training. That health publicity has often been unsuccessful is due partly (1) to lack of funds; (2) to enthusiastic but inexperienced persons attempting it, because no more skilled workers were available. Commercial advertising agencies are using health material skillfully for selling products, such as chewing gum, insurance, dentifrices."

The above is from a chapter on "Health Publicity" in *Health Supervision and Medical Inspection of Schools*, by Dr. Thomas D. Wood and Dr. Hugh Grant Rowell, which includes concise sections on Talks, Newspapers, Special Publications, Special Messages to Parents, Special Meetings for Promotion of Health, Health Moving Pictures, Window Exhibits, Poster Exhibits, Radio and Special Campaigns. The authors have avoided the dangers of the extensive, inclusive lists of sources grouped under broad, general topics, which are the cause of so much unsatisfactory correspondence.—W. B. Saunders Co., Philadelphia. 1927.

Publicity for Cincinnati, 1927—Some miss the annual meeting of the A.P.H.A. because they overlook the date and make conflicting engagements. Others fail to attend for lack of repeated mention which might in the end lead to their planning to go.

Editors of all health periodicals and house organs can help these two groups by giving the date and the place in every issue from now on.

State and national bulletins or house organs, and local bulletins as well, will aid the non-convention goers by telling something about the program, the valuable contacts with other health workers, and the rare opportunities for consultation with specialists in all phases of public health.

Many volunteer workers, members of boards, and health committee members from chambers of commerce and other lay groups could be interested by advance publicity.

Who Will Be There?—Who of those actually doing the publicity and educational work of health agencies will be at the A.P.H.A. meeting in Cincinnati, October, 1927?

Or, unfortunately, *who will not be there* because their superior officers do not appreciate the significance of the opportunity for the staff members who write copy, make addresses, plan

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York City.

the use of motion pictures, or do other publicity tasks?

No other gathering of public health workers offers so extensive a program of thought-provoking and practical sessions for those doing any phase of health education work.

The health officer or executive secretary cannot be an adequate proxy for the actual publicity worker.

What Public Health Books for a Public Library?—What books on public health topics should be found in a public library? What books will best meet the demands of civics classes, club women who write papers on public health topics, business men who are discussing public health in the chamber of commerce, and the other non-professional patrons of the public library?

The Cleveland Health Council, Virginia R. Wing, secretary, has been requested to supply a list of such books to be recommended by the Cleveland Public Library. If we aid Cleveland in making up the list, doubtless the *Library Journal*, chief organ of all libraries, will publish it.

Probably we should offer a three or five book collection for smaller cities, with additions for the larger libraries. What are *your* recommendations? And will the Public Health Education Section appoint a special committee, in collaboration with the National Health Library, to handle the suggestions? The subject seems to merit discussion in some group at Cincinnati in October.

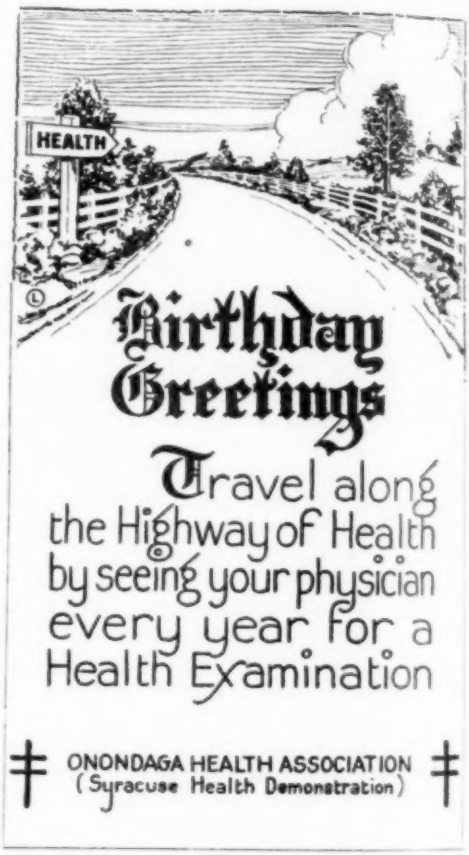
Making It Easy to Reply—(1) Much correspondence between local health agencies, and between national, state and local agencies could be simplified by sending two duplicate copies. In many cases the reply could be a word or phrase penciled at the bottom of one of the two copies and re-mailed to the sender.

(2) Added gain in handling, answering and filing would come from limiting each communication to a single topic—a question, an explanation, a suggestion. Only when several such items are closely related and can be handled together would they appear on the same sheet.

(3) Further gain would result through the use of a memorandum form: "To Mr. Calver," "From Mr. Routzahn," "Subject . . ." at the top.

(4) The numbering of paragraphs will tempt the dictator to greater brevity by lessening the use of words and phrases needed to make a smoothly flowing letter. Each numbered paragraph can stand on its own merits.

Birthday Greetings—Several years ago Dr. Charles S. Prest, Brooklyn Tuberculosis and Health Association, sent a health examination greeting card on the birthdays of many citizens of Brooklyn. More recently James G. Stone, director of health education and publicity, Onondaga Health Assn., 327 Montgomery St., Syracuse, has prepared an especially attractive


HEALTH
Birthday Greetings
Travel along the Highway of Health by seeing your physician every year for a Health Examination
ONONDAGA HEALTH ASSOCIATION
(Syracuse Health Demonstration)

card for a similar use. It is being sent to about 1,400 names from the membership of the Rotary Club, Chamber of Commerce and similar organizations. The average age of those on the list is probably 50 years. Cost: art work, $16.50; electrotypes, $10.50; printing, $15.00. In two colors.

Less and Less and More and More—"There was a unanimous demand (at the Pennsylvania State Conference of Social

Work) for fewer 'set' papers and more real discussion, opportunities to ask questions, more group meetings, more time spent in detailed discussion."—*P C A Herald.* March, 1927.

The Committee on Findings of the Church Publicity Conference, Atlantic City, March 22-24, 1927, recommended that "in shaping future conference programs the sessions be devoted chiefly to actual round table free and open discussions and that little time be given to set addresses."

Who **Wants How Many Facts?**—"I am always troubled about our annual reports. It is so hard to make them interesting, but do you suppose that in our efforts to publish popular leaflets and reports, we sometimes underestimate the number of thoughtful people who are interested in facts? It seems to me that an annual report, while it should contain some human interest material, should at the same time be substantial, dignified, and give a real measure of volume of work accomplished during the year, and a description of activities."—Geo. A. Hastings, State Charities Aid Assn., New York City.

The **Short Story Awards**—The short story contest conducted by the Committee on Publicity Methods in Social Work resulted in the first prize being awarded to Viola Paradise of New York, a professional writer, for her story, "Wild West," which hinged upon the lack of maternity care made available in many states through the Sheppard-Towner Act. The story will appear in *The Pictorial Review.* Miss Paradise was formerly connected with the U. S. Children's Bureau. Her articles and short stories have appeared in *Atlantic Monthly, Scribner's, Harper's, Collier's, Hearst's International,* and *Forum.*

Publicity at Des Moines, May, 1927—Health workers were well represented in the 20 sessions conducted in connection with the National Conference of Social Work by the Division on Educational Publicity and the Committee on Publicity Methods. The executive committees for the coming year include:

Division on Educational Publicity—Homer Borst, Indianapolis, chairman; Clare M. Tousley, New York, secretary; Bernard C. Roloff, Illinois Social Hygiene League, representing health.

Committee on Publicity Methods—Edwin C. Jones, Chicago, chairman; Mary Swain Routzahn, New York, secretary and editor *News Bulletin;* Lewis E. Bracy (Texas), T. J. Edmonds (Iowa), Charles E. Miner (St. Louis), and Evart G. Routzahn (New York), representing health.

Recognition of Service Rendered or Personal Achievement—Splendid publicity for worthwhile activities has been secured through giving honor to individuals and groups who merited the recognition. Awards, presentations or meetings in honor of long service as a professional or volunteer worker, or of special service rendered in connection with a particular piece of work or successfully meeting emergencies might take a more important place in our publicity programs.

The *Public Health Nurse* calls attention to a special phase of this subject: "We have noted in some of the foreign and English magazines the official recognition given to nurses who have performed some unusual feat of bravery or endurance. We think perhaps they do these things rather better abroad than we do here. The latest is an announcement contained in the English *Nursing Times* that the British Humane Society has awarded a medal to Miss Grace Rattray, district nurse of Pooley Bridge, Westmorland, who rowed four miles in darkness across Ullswater in a blizzard, the roads being impassable because of snowdrifts, and then 'climbed the fells' before reaching her patient."

What Type Is Easiest to Read?—The British government report of 1922 on "the best faces of type and modes of display for Government printing" carried the suggestion that the Medical Research Council make "inquiries upon physiological and psychological lines into the legibility of printed matter and the optical properties of paper and ink." A committee of the Council has issued a report. This report will not satisfy the many health workers who seek direct, positive answers to the numerous practical questions so frequently raised in conferences on publicity methods, but will interest those who wish to understand the nature of this specific publicity problem. The detailed summaries of the considerable literature on the subject, the discussion of the elements which affect legibility, and the investigation technic worked out by the committee are of great interest. Another committee has been appointed by the council to direct a wider scheme of investigation into the physiology of vision which is expected to

include further study of type legibility.—*The Legibility of Print.* (Reviewed on page ——.)

"ASK ME ANOTHER"

Mrs. William Durr, Akron, Ohio, contributes: How do you distinguish the malaria mosquito from the harmless ones? How do they determine whether a dead person found in water was drowned or previously murdered? How can a doctor count the cells of your blood?

W. M. Olson, Cook County Dept. of Health, contributes several "opinion" and experience questions: Would you be afraid to take your children into a city where diphtheria is common? Have you ever drunk milk from a tuberculous cow? Does your doctor report whooping cough cases to the health department? Did you ever get sick from drinking bad water?

"Ask Me Another" for automobilists. National Safety Council, 108 East Ohio St., Chicago. *Free.* Eight sets of 10 questions and answers for press use.

"Ask Me Another." *Health News,* N. Y. State Dept. of Health. April 18 and 25, 1927. Five questions.

"Can You Answer These?" *Hygeia.* June, 1927. 20 questions and answers.

"Now You Ask One." *Chicago's Health.* April 25, 1927. 43 questions and answers.

"The Question Box" answers many questions by tuberculous patients. The *Cheer-O-Gram,* Detroit Tuberculosis Society.

The St. Louis Tuberculosis and Health Society adapted the question idea to an explanation of their Christmas Seal Sale follow-up.

An adaptation of "Ask Me Another" to an annual meeting, in *Annual Report of the Civic Club of Allegheny County,* 604 Kennan Bldg., Pittsburgh. 1927. The president of the Civic Club interrogated the chairman of committees, thus the meeting program and the printed annual report consisted of questions and answers grouped under "Publicity," "Soho Bath House," "Open Air Schools," "Membership and Finance," etc., etc.

"Ask Me Another" on Social Work, *Better Times,* 151 Fifth Ave., New York. *Free.*

An Intelligence Test for Parents. How well do you know your job? *Children,* the magazine for parents, 353 Fourth Ave., New York. *Free* in quantity. 33 questions. Samples: I. An underweight child should have (a) more activity; (b) more sleep; (c) more stimulation. II. Nine or ten hours sleep is considered adequate for a child of (a) three years; (b) five years; (c) eight years; (d) twelve years.

ANNUAL REPORTS

The 1924 and 1925 annual reports of one state health department were received in April, 1927.

Annual Report, Division of Health, Toledo, appears as a supplement to *Toledo City Journal.* April 30, 1927. On cover page: "Your Health was Protected in 1926 by The Condemnation of More Than 220,000 Pounds of Diseased Meat (and 5 other items). All Performed by the Division of Public Health at a Total Expense of $148,021.82 or Less Than 50 Cents Per Person."

Carrying On, annual report of Chicago Chapter, American Red Cross, 616 South Michigan Ave., Chicago. 24 pages, 3¼ by 6¼ inches. An interesting report of a service organization; popularized; with a few statistical items under most of the headings; one page auditor's report; two pages at the end with officers and board members.

BULLETINS

"What We Need Is a House Organ!" *Better Times.* June, 1927. 25 cents. "How social work makes use of the printed glad hander. Clear and definite purpose necessary to success."

The Anode, Bureau of Safety of the Anaconda Copper Mining Co., Butte, Mont., is an example of an educational house organ for industrial workers.

Better Health, Syracuse Dept. of Health, carries an effectively selected and arranged page of statistics.

Bulletin, Ohio Public Health Assn. Includes a half-column headed "Important May Dates." Dates of state and national conventions and special events.

Health, New Haven Dept. of Health, manages to publish considerable statistical data without making its pages look deadly dull. Better get a copy than for me to attempt a description here. The illustration of a section of a rain barrel harboring mosquitoes seems quite effective. April, 1927.

Monthly Bulletin, Massachusetts Society for Mental Hygiene, 5 Joy St., Boston, is running a series of simple case stories under the title of "What Is Mental Hygiene?" They end with *This* Is Mental Hygiene.

PUBLIC HEALTH NURSING

MIRIAM AMES, R.N.

Though Doctors Disagree—In the May *Graphic Survey*, Dr. Michael M. Davis, as a result of his own observations, describes some good and bad features of coöperative clinics which have developed within the past two and one-half years in Berlin, Germany. We are perfectly familiar with certain bad features of our own out-patient departments, the steering of men and women, children and babies through diverse channels, acquainting many of them for the first time with the intricacies of a system which seems most complex and somewhat terrifying, and treating them so often not as persons but part of the system.

One appreciates "the dignity and individuality which accompany organized medical service under self support." German insurance societies formed under sickness insurance laws are not governmental bodies but mutually self governing organizations of insured persons and their employers. Like our commercial life insurance societies, though these German organizations are not commercial in our sense, they are under state supervision. These societies may be small organizations composed of the employes of a single establishment. The larger and more significant societies are formed on a district basis.

All employed persons where wages do not exceed a specified amount must belong to some sickness insurance society. Two-thirds of the cost is paid by the insured person, one-third by his employer. Payment of half to two-thirds of wages during illness and medical care during sickness are the two chief benefits. The society must provide these, and it may also, at its discretion, furnish medical care for members of the families of the insured. On the governing body of the society, two-thirds of the members represent the insured persons, one-third, the employers. This body elects a managing committee which in turn chooses the executive officers.

Some 19 million Germans are insured in about seven thousand such societies united in a network of federations; federation according to the kind of society, federations for cities and districts, with a federation of federations for the whole of Germany. Thus it is a federation of the sickness insurance societies of Berlin under whose auspices the 38 clinics for furnishing medical care to members and their families are now maintained.

Dr. Walter Pryll is responsible for the effective organization of the clinics and he is also medical supervisor and medical adviser of the corresponding federation of societies for all Germany. According to Dr. Pryll, the members and their families are receiving better treatment than they have ever previously enjoyed. The physicians have adequate equipment and assistants, laboratory facilities, and opportunities for consultation, as well as adequate salaries. The salary not only attracts but retains a very satisfactory type of physician.

There is probably no other community in the world with so large a system of organized medical service under one management. In Berlin, the people served are nearly all workmen and their families. The middle and professional classes are hardly represented.

Bitter antagonism on the part of the medical societies and most medical educators was expressed toward the centralized organization of medical service which the Berlin system represents.

On the vital question of the quality of medical personnel and of service rendered patients, a visitor, even if a doctor, could not apply any conclusive test. One can report only impressions of favorable working conditions, an interested and active-minded type of physician, and records which, while not full as in the best teaching clinics, are systematically and definitely written out. The basis of comparison for any such system as this must, of course, be with the general medical practice of the community, not with the service in the office of expensive specialists or in selected clinics devoted to teaching and research.

The newer organized method of furnishing medical service is far less expensive than the old method of paying by the visit, or in the case of mutual societies at so much per member.

The clinics are faced with the necessity of providing service which is at least as satisfac-

tory to the members as individual medical practice. The focus of the clinic policy cannot be described as "medical service for less money," but as "better medical service for less money."

Is it practicable to achieve this ideal through coöperative organization without breaking down medical morale or deteriorating the ultimate quality of service for the cure and prevention of disease? That is the issue now on trial on a large scale in the capital city of the German republic.

We shall look forward to the anticipated report on Health Insurance by the Health Section of the League of Nations which may furnish an unprejudiced view of the centralized organization of medical service.

As to Annual Reports—Now is the time of year when annual reports begin to arrive in the morning mail. Taken together with "The Report of the Committee on Standard Forms for Annual Reports," published in the May issue of the *Public Health Nurse*, and Professor Ira V. Hiscock's article "The Annual Report" in the April issue of the same magazine, they offer a good opportunity to make a study of the purpose and technic of the report for oneself.

Professor Hiscock suggests that an annual report has three major functions:

Accounting and administration features
Education of the public
Statistical analysis

The audience, he says, may be divided roughly into four groups:

The supporting public
The Board
The Staff
Other public health workers who may derive interest and benefit from the report.

It particularly concerns these last three groups that our reports be standardized, to some extent at least, in order that we may compare the functioning of the organizations described. The Committee on Standard Forms submits a brief, and therefore so much the more practical, outline of the essential points of a report.

That Professor Hiscock's first group, the supporting public, is being appreciated as an important part of the audience, is evident from the changing form of the report. Many, of this year's vintage, attempt to tell their stories by photographs, silhouettes, charts and graphs. The tendency is away from long and closely printed paragraphs, to eye-catching arrangement of material.

The report is an accounting of the year's work, but we are realizing that it must be an accounting in a form sufficiently attractive to keep it out of the waste basket until it has been read.

The Chronic Sick—A study of the chronic sick is about to be undertaken in Boston under the direction of Dr. Haven Emerson. New cases coming to health and social agencies during a three-months period will be studied, with the purpose of gauging the nature and the magnitude of the need for care and treatment.

"All Social Workers unite in feeling the inadequacy of present facilities for caring for the chronic sick," says the May bulletin of the Boston Council of Social Agencies. "Everyone knows the extent to which inadequate, unsupervised boarding home care has grown. But no one can say what the community ought to set up as an adequate program."

A Public Health Nursing Story Contest—"The Publications Committee and the editor want to get some true stories for publication in *The Public Health Nurse*—stories which will portray public health nursing not in terms of definitions or mechanics but will show the warmth of the service which enkindles the nurse but which she keeps altogether too much to herself."

Three prizes of $50, $30 and $20 are offered for the three best stories.

"What *is* a good story? Suspense, truth, the realities of life—its harshness and its tenderness—fear, ignorance, courage, heroism, humor, pathos—these are the essence of a good story and these are the merchandise of public health nursing. You who know what lies behind the entry on the record card or how and where the example of Florence Nightingale lives on today, summon your talent to put into words and give to others a picture of that spirit of service which is the true definition of public health nursing."

Stories must be submitted by September 15, 1927. Rules of the contest may be obtained by applying to Elizabeth G. Fox, N.O.P.H.N., 370 Seventh Avenue, New York City.—*Pub. Health Nurse*, May, 1927.

LAW AND LEGISLATION

JAMES A. TOBEY, LL.B., DR.P.H.

Legal Aspects of Vaccination—A notable contribution to public health law is the 74-page pamphlet entitled "Smallpox Vaccination Laws, Regulations, and Court Decisions," prepared by William Fowler, LL.B., and recently issued by the Public Health Service as *Supplement No. 60*. Beginning with a table of nearly 200 cases on this subject decided by courts of last resort, this valuable compilation next presents an analysis of smallpox vaccination laws and regulations and a review of the court decisions. It then gives the actual texts of vaccination laws and regulations, arranged by states, with annotations to the court decisions in each jurisdiction. As a consequence, the sanitarian or attorney interested in this important phase of public health has before him the correlated action of the legislative, executive, and judicial branches of each state. The extent to which the laws are enforced by the executive does not appear, of course, and as pointed out in the introduction, the existence of a stringent vaccination law does not necessarily mean a well vaccinated population. In general, however, the states with the best legal provisions against smallpox have the smallest amount of the disease.

Of particular interest is the wide variation in statutory provisions in the different states, and also the diversity in some of the court decisions. The written laws range all the way from those which authorize compulsory vaccination of all persons to those in which such vaccination is expressly prohibited. The one extreme is represented in North Carolina, where the state law authorizes general compulsory vaccination, a provision which has been sustained by the supreme court of that state. The other aspect is shown in North Dakota, where the law says that vaccination shall not be a condition precedent to school attendance or any other right. Here the supreme court of the state has refused to uphold an order of the State Board of Health that school children be vaccinated before being admitted to school. This latter attitude is the exception, however, and the trend of the decisions is certainly to the effect that vaccination may be required as a prerequisite to school attendance, especially when smallpox is present or threatens. It is the province of the legislature to determine the efficacy of vaccination and the desirability of requiring it, and when such a decision has been made and written into a statute, the courts will uphold the action of the executive in enforcing in a reasonable manner the provisions of the law.

A word as to how this particular pamphlet came to be prepared, an item which is not explained in it, but which ought to be set forth here in order that credit may be properly apportioned. Several years ago the Public Health Service issued a pamphlet on vaccination laws, compiled by Dr. J. W. Kerr. Since this had become out of date, the American Association for Medical Progress of New York City began to collect modern laws on vaccination, with a view to publishing them together. The associate editor suggested that annotations to court decisions would add immensely to the value of such a compilation, a list of the cases having already been compiled and published in an article in the *Journal of the American Medical Association*. The U. S. Public Health Service was requested to undertake the whole job, with the result that there is now available this most useful compilation. The only persons who will not get a thrill out of it are the anti-vaccinationists.

The work on this bulletin has been thoroughly done by Mr. Fowler and there seem to be but few errors. It is, of course, no disparagement of this work to advise persons who are interested in laws or court decisions in a particular state to read them in their entirety at their original sources, the compiled statutes and official law reporters. This pamphlet is not intended as a text on public health law or on this one phase of it, but it is designed as a source of information. Its arrangement and system mark it as the best pamphlet on a legal subject so far put out by the Public Health Service.

United States Supreme Court Upholds Sterilization—An opinion of far-reaching public health and sociological significance was

handed down on May 2, 1927, by the U. S. Supreme Court. This decision, Buck vs. Bell, sustains as constitutional the eugenical sterilization law passed by Virginia in 1924, a statute which had previously been upheld by the Supreme Court of Appeals of that state (143 Va. 310). Previous to this decision, every state sterilization law which had been before the courts had been found unconstitutional for various reasons, such as lack of provision for due process of law, cruel and unjust punishment, and other legal causes.

The Virginia law of 1924 was adopted as a measure for the welfare of society, and provided for the sterilization by vasectomy or salpingectomy of mental defectives. The superintendent of an institution having such patients could have the operation performed only after compliance with careful provisions. First he must present a petition to the special board of directors, setting forth the facts and the reasons for the proposed operation. A hearing is held, at which the guardian of the inmate may appear, and the evidence is recorded. After the board has rendered its opinion, an appeal may be taken to the circuit court of the county by either party and from there to the Supreme Court of Appeals of the state.

"There can be no doubt that so far as procedure is concerned," said Mr. Justice Holmes for the Court, "the rights of the patient are most carefully considered, and as every step in this case was taken in scrupulous compliance with the statute and after months of observation, there is no doubt that in that respect the plaintiff in error has had due process of law."

The plaintiff in this case was an 18-year old feebleminded white woman, the daughter of a feebleminded mother, and herself the mother of a feebleminded child of illegitimate birth, all confined in the State Colony for Epileptics and Feeble Minded. The judgment found was that this woman was the probable potential parent of socially inadequate offspring, likewise afflicted, that she could be sexually sterilized without detriment to her general health, and that the welfare of society would be promoted thereby.

That great jurist, Justice Holmes, points out that the public welfare may call upon the best citizens for their lives. "It would be strange," he says, "if it could not call upon those who already sap the strength of the state for these lesser sacrifices, often not felt to be such by those concerned, in order to prevent our being swamped with incompetence. It is better for the world, if instead of waiting to execute degenerate offspring for crime, or to let them starve for their imbecility, society can prevent those who are manifestly unfit from continuing their kind."

The court then points out that the principle that sustains compulsory vaccination is broad enough to cover cutting the Fallopian tubes, citing the leading case of Jacobson v. Massachusetts, 197 U. S. 11. "Three generations of imbeciles are enough." Mr. Justice Butler dissented without rendering an opinion.

This significant decision, which settles the constitutionality of properly drafted and safeguarded sterilization laws, opens future possibilities of vast importance in the field of eugenics and public health.

State Health Legislation — Forty-two states held regular legislative sessions this year, with the result that there are some new health laws. Kansas and Maine, which had abstained for 5 years from participation in the benefits of the Federal Maternity and Infancy Act, are reported by the U. S. Children's Bureau to have yielded at last. All but 3 states are now "cooperating," only Connecticut, Illinois, and Massachusetts electing to stand by their principles and remain aloof. The Children's Bureau has issued several summaries of new child welfare legislation in the states.

Several of the states have issued bulletins on the progress of health legislation, a procedure which is well worth while. Thus, the May bulletin of Connecticut lists more than 100 measures of direct or indirect interest to public health. Most of them were rejected, but bills relative to venereal diseases, state aid to towns, milk tests, tetraethyl lead, marriage licenses, and "natureopathy" are reported as having passed both houses. In New Mexico an act allowing fees from certified copies of birth and death reports to go to the State Bureau of Public Health was the only new health law, though an increase in appropriation was secured.

State aid for public health projects, improvement in county health work, and methods for coping with stream pollution were the subject of new laws in New York. The Sanitary Code of this state has been amended to make more stringent the sanitary control of milk supplies. Indiana adopted a eugenic sterilization act, a stream pollution law, and one or two acts relating to food control.

New tuberculosis legislation has been adopted in Maryland, Oregon, New York, Minnesota and Wisconsin.

Other new state health legislation will be reported as it comes to our attention.

County Tuberculosis Law Upheld—The Supreme Court of Pennsylvania has sustained the county sanatorium law of that state in an opinion handed down on May 9, 1927, Comm. ex rel. James vs. Woodring et al., — Pa. —. This particular statute had been challenged as invalid under the provisions of the state constitution, but the court denied all the contentions of its opponents. Since the act applied to all counties it was held not to be in violation of the section of the state constitution which prohibits enactment of local legislation, nor did the provision for an advisory board to aid in the management and operation of the hospital constitute delegation of municipal powers to a special commission, as forbidden in the constitution. The court likewise sustained the action of the legislature in validating elections in favor of the establishment of tuberculosis hospitals held under a law of 1921, which had been declared unconstitutional by a county court. The decision is chiefly local in scope, as it deals with legal questions under the Pennsylvania constitution, but there are some points of general interest.

County sanatorium laws have been upheld by the courts in California, New York, Massachusetts, and Ohio, and have been favorably interpreted in Illinois, Kansas, Kentucky, and North Carolina. The leading case is the Massachusetts one of Essex County vs. Newburyport, 150 N. E. 234, decided in 1926. A comprehensive article on tuberculosis and the courts is scheduled for the July number of the *Journal of Outdoor Life*.

Nuisance Procedure in New York—The duties and powers of health officers and boards of health under New York law have been effectively described by Dr. Frank W. Laidlaw, a district state health officer, in an 8-page pamphlet recently issued by the State Department of Health of New York. This type of information and its method of presentation are useful, for nuisances always have vexed and probably will for a long time continue to harass the peace and comfort of health officials. Dr. Laidlaw quotes extracts from the laws of his state and discusses such topics as the definition of nuisances, the relative powers of boards and health officers in dealing with them, the making of regulations, and procedures for abatement of nuisances.

When a regulation concerning nuisances is violated, the procedure in New York is for the health officer to make a written report to the board of health, stating the conditions. The health officer must also report to the state health commissioner within 48 hours if the local board declares the condition not a nuisance or if it refuses to take action within 5 days after the report. If the board acts favorably on the report, a notice is issued to the violator and he is cited to appear for a hearing as to why penalty should not be imposed. In New York the board itself may prescribe a fine for violation of its regulations. The notice is served by a peace officer in the same manner as any legal process. After the hearing, proceedings of which are recorded, a fine may be imposed if the facts justify it. If the fine is not paid within a reasonable time, the board must bring an action in the court of special sessions to recover it.

If a nuisance occurs which is not covered by a local regulation, the procedure is governed by the state sanitary code. The health officer reports to the board and, if necessary, to the state commissioner of health. The board investigates, gives the violator an opportunity to be heard, and may issue an order for abatement. Failure to comply is a misdemeanor, for which an individual can be arrested and fined or imprisoned by a justice of the peace. Failure to comply can also form the basis for an injunction.

No mention is made in the pamphlet of summary abatement. In New York as elsewhere, however, health authorities can undoubtedly act in a summary manner in an emergency, in cases where failure to abate a nuisance immediately would actually jeopardize public health. The health authorities would have to be able to justify their actions, though, and would act at their peril, when the technical legal procedures were not followed.

Communicable Disease Laws in New Jersey—The laws and regulations dealing with the control of communicable diseases in New Jersey are discussed in an article by William H. MacDonald, district health officer, in *Public Health News* of that state for May, 1927. Mr. MacDonald suggests that the enactment of laws will not alone efface an evil and that persuasion is much wiser than compulsion. "Laws and regulations," he writes, "must be depended upon to form the basis for certain procedures in communicable disease control work. But, in general, they should be looked upon as minimum standards and even then their enforcement de-

pends largely upon popular support. The wise and efficient health worker will endeavor not so much to force people to do something which they are unwilling to do, but to secure coöperation by having people want to do something which at first was objectionable to them."

Mussolini on Public Health—The vigorous and militant dictator of Italy believes that "in a well ordered state the care of the physical health of the people must occupy first place." In his notable speech of May 26, 1927, outlining his plans for a greater Italy, which is reported in full in the *New York Times* for May 29, 1927, Premier Mussolini devotes a considerable place to a discussion of public health. He points out that "the picture in this regard is very gray," stating that social maladies show a recrudescence and that tuberculosis is especially prevalent. A nation is strongest, he believes, when most populous, and he wants to see an increasing birth rate. He even mentioned the possibility of a tax on barren marriages and it is reported that this allusion provoked "lively comments and signs of assent" from his hearers.

Diseases Caused by Milk—Up to 1909 there were reported over 700 milk-borne epidemics of disease, of which 179 occurred in the United States. Since that time 612 additional instances have been reported of infected milk or milk products as the cause of outbreaks of disease in this country. These outbreaks have been listed in a bulletin entitled "Further Studies on the Importance of Milk and Milk Products as a Factor in the Causation of Outbreaks of Disease in the United States," by Charles Armstrong and Thomas Parran, surgeons of the U. S. Public Health Service, which has recently issued this pamphlet as *Supplement No. 62.*

Ordinary raw milk or its products was incriminated in 179 of these outbreaks, pasteurized milk or its products in 29, and certified milk in 3, while in 356 the character of the incriminated supply is unstated. Ice cream caused 36 outbreaks, butter 3, and cheese 4. It is notable that there is no evidence that an epidemic has ever been caused by the concentrated milks, such as the condensed, evaporated, and dried, which lends support to the contention that these forms of milk have a definite public health value.

A paper on "Recent Court Decisions on Pasteurization" by the associate editor was presented before the conference of State and Provincial Health Authorities at their Annual Conference in Washington in May, and will be published later.

The Supreme Court of Pennsylvania sustained a local ordinance requiring pasteurization in an opinion delivered early in May. This will be reported later in more detail.

Report on St. Elizabeths Hospital—The report made by a special committee of 5 physicians appointed by Secretary of the Interior Work to survey conditions at the government hospital for the insane has been issued as a reprint from the *American Journal of Psychiatry* for January, 1927, together with a 22-page reprint of notes and comment on the attacks on the institution. This latter pamphlet is devoted to a discussion of the alleged recklessness and prejudice of the Honorable Mr. Blanton, representative from Texas, who has been vitriolic in his attacks on this institution. According to an item in the *New York Times* for May 22, 1927, Dr. Work mailed 500 copies of the reprint to members of Congress and others, using the government franking privilege. On objection by Mr. Blanton, Dr. Work was obliged to reimburse the Post Office Department for this mailing as the material was legally not mailable under government frank. "Mr. Blanton," says the *Times*, "does not like the way things have been run at St. Elizabeths, but Secretary Work has been unable to find anything wrong." The *Times* puts it mildly.

Miscellaneous Items—An appeal for $2,000,000 to fight leprosy in the Philippine Islands is being made to the American people, with the approval of Governor General Leonard Wood. The government appropriation of $600,000 a year is considered insufficient.

Safety codes for the prevention of dust explosions in industrial establishments have been issued by the U. S. Bureau of Labor Statistics as *Bulletin No. 433.* These codes represent the joint work of the U. S. Bureau of Chemistry and the National Fire Protection Association.

Stream pollution in the United States is the subject of a new monograph prepared by George J. Schulz of the Library of Congress and issued as *House of Representatives Document No. 632*, 69th Congress, 2nd Session.

An injunction against the village of Garden City, N. Y., restraining it from using a chlorination apparatus which infringes patents held by Wallace & Tiernan Co. was issued on May 17, 1927, by the U. S. District Court for the Eastern District of New York.